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COMPAQ TO KILL OFF ALPHA LINE

Intel migration offers industry-standard choices to customers

BY JAIKUMAR VIJAYAN

Compaq Computer Corp.'s abrupt decision last week to shift its entire 64-bit series of AlphaServers to Intel Corp.'s oew Itanium processor by 2004 gives Alpha users an industry-standard architecture on which to base future applications.

Compaq's related decision to stop further developmeot of the Alpha microprocessor architecture in two years also rids the company of an expensive technology that's increasingly losing its viability, users and analysts said.

But, they added, the money freed by killing off Alpha development must be reinvested in core technologies such as the Tru64 Unix, OpenVMS and NonStop Kernel operating systems for the move to make long-term sense for the company. Without that commitment to the technologies that differeotiate it, Compaq will be just another beige-box maker, they said.

Compaq, page 14

B2B STANDARDS INCH FORWARD

Vendor pitches method to automate processes

BY MICHAEL MEEHAN

Believing too many human beings are oecessary to get work done with so-called e-commerce, the operator of one of world's largest business-to-business networks last week unveiled a method for automating busioess processes among eoterprises.

GE Global Exchange Services plans to build customized applications for modeling, executing, monitoring and tracking supply chain processes among Fortune 500 companies. These processes

Automation, page 10

EDI, ebXML groups agree to cooperate

BY MICHAEL MEEHAN

Laurel and Hardy. Peanut butter and jelly. EDI and XML?

Though the two electronic trading formats have been cast as mortal foes, the standards bodies behind them have agreed to create a set of shared business processes that could ultimately create standards harmony in the world of e-commerce.

The Accredited Standards Committee X12 and the UN/EDIFACT Working Group, the standards bodies behind the world's two most widely used

EDI/ebXML, page 11

Second Chance

Microsoft gets breakup reprieve; monopoly findings stand

BY PATRICK THIBODEAU
WASHINGTON

To the relief of Microsoft Chairman Bill Gates, a federal appeals court may have freed his company from the thing it has feared the most, a breakup. But the company still faces an unpleasant choice: a settlement that could curb its business practices, or continued litigation with an uncertain outcome.

And Microsoft Corp. has a new worry: the possibility that the government and the states could bring new action, based on last week's decision, against its emerging products. That in particular could affect the Windows XP operating system, which is due for release in October.

The state attorneys general earlier this month called Microsoft's linking of its .Net Internet services and the XP operating system "troubling." The decision of the U.S. Circuit Court of Appeals of the District of Columbia doesn't prevent the government from seeking court intervention if it feels that Microsoft is repeating behavior that was fault-

Microsoft, page 61

SCORE CARD

Both sides declared victory. But while the appeals court has blunted the government's breakup ax, the feds still have a strong case.

MICROSOFT WINS

Breakup. The appeals court reversed the breakup order and remanded it to the lower court. A breakup is still possible, but conduct remedies seem more likely.

Attempted monopolization. The court rejected assertions that Microsoft attempted to monopolize the browser market.

GOVERNMENT WINS

Monopoly maintenance. The court ruled largely in the government's favor, agreeing that the vendor used illegal tactics. This was the government's major claim.

NOBODY WINS

Tying. The court wants the lower court to revisit this subject – bundling the browser to the OS. The court said that not all ties are bad.

Mixed Bag = Uncertainty

Users debate ruling's effect on vendor, XP

BY COMPUTERWORLD STAFF

Corporate end users see last week's U.S. Court of Appeals decision, reversing the breakup of Microsoft Corp., as influencing the company's future behavior. But they are uncertain about what that impact will be and whether it will help or hurt their companies.

Some, like Rod Mueller, manager of technology at International Paper Corp. in Memphis, said this latest development could encourage Microsoft to become more aggressive and give it "a license to kill." He said the decision complicates his concerns about the company's

Uncertainty, page 61

Disqualified!

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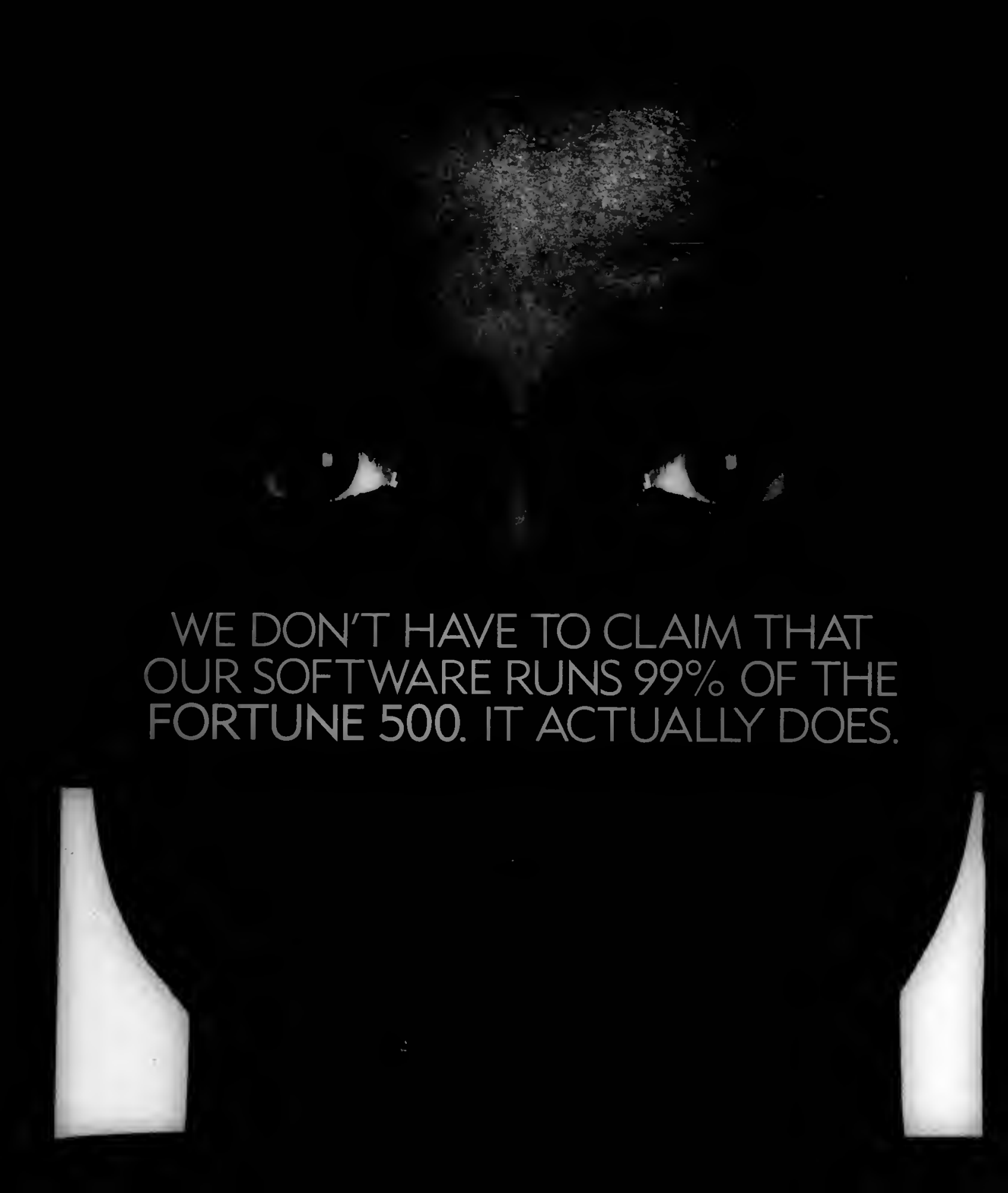
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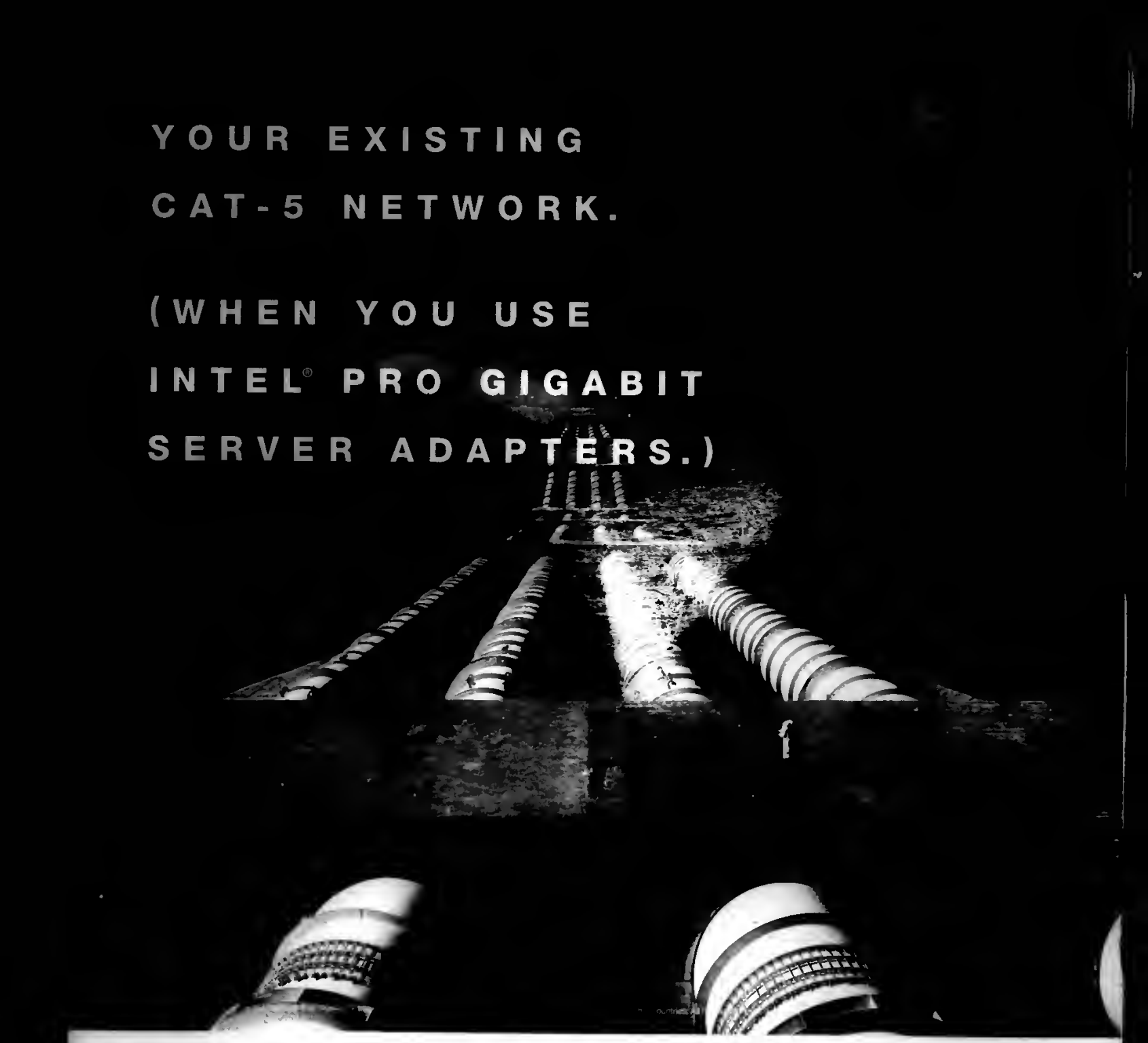

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CAPITALIZING ON CUSTOMERS

WALTER P. CALAHAN

Thanks to its savvy use of customer data, credit card issuer Capital One has grown its customer base more than fivefold since 1995, to 33 million accounts. One of the keys to its success? An IT organization that's "the central nervous system" for the company, says co-CIO Marge Connelly (at right). **PAGE 36**

CACHE OR CURRENT

Caching static Web content close to the audience makes delivery faster, but only for data that's not current. Users are looking for ways to control content cached on the edge of the network to make sites both fast and fresh. **PAGE 52**

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7 Redundant retail B2B efforts are stupid and should be consolidated in three months, Target's vice chairman charges.

8 HIPAA compliance certification and testing service may be overkill for large IT groups, but small firms might be able to use the extra help.

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ONLINE

MICROSOFT RULING

For complete coverage of the Microsoft antitrust case, head to **www.computerworld.com/mslegal**

CUSTOMERS ARE FIRST WITH CRM

The old adage that the customer comes first can get a much-needed boost from a well-functioning CRM program. E.piphany's Kareo Howard explains how such a system could work.
www.computerworld.com/ecommerce

BROADBAND NEEDED FOR SUCCESS

Without universal broadband access, U.S. businesses won't be able to compete online against their counterparts in Europe and Asia — and vast segments of our own population will be left behind, says Sen. John F. Kerry (D-Mass.).
www.computerworld.com/ecommerce

JOB SATISFACTION

To view results of *Computerworld*'s annual job satisfaction survey broken down by age and gender, visit
www.computerworld.com/jobsurvey

AT DEADLINE

SAP Rescues Commerce One

Enterprise resource planning giant SAP AG last Friday rushed to the aid of its struggling b-procurement partner Commerce One Inc., promising up to $225 million, which will give it ownership of roughly 20% of Commerce One's stock.

Pleasanton, Calif.-based Commerce One has projected that it will report revenue of $100 million to $120 million for the quarter just ended, down from $170 million the previous quarter.

Services in Demand

Companies have slashed technology purchases, but they don't plan to cut back on external hardware and software support services, said San Jose-based Dataquest Inc. Of 250 organizations surveyed by Dataquest, 52% said they expect to spend more on external hardware support and 63% expect to spend more on external software support between 2001 and 2003, according to a report released Friday.

Corrections

In the story "Winners Focus on Customer" (Technology Special Report, Emerging Companies, "Survival of the Fittest," June 11), Gordon Eiland's company affiliation was misidentified. Eiland is vice president of planning and analysis and new business at Borders Group Inc. in Ann Arbor, Mich. In the same Emerging Companies package, it was noted that Saga Software merged with Software AG, but the name of the merged company was incorrectly listed. The merged entity is Software AG Inc.

In the article "Diversity Pays Off" (Business, Special Report, June 18), the second reference to Florida Power & Light as "Florida Power" was incorrect.

A profile of W-Technologies (Emerging Companies, June 4) incorrectly stated that the company is profitable.

Broker Revamps IT to Support New Strategy

In shift to diversified offerings, Ameritrade names co-CIOs to unify IT functions

BY LINDA ROSENCRANCE

Online broker Ameritrade Holding Corp. is centralizing its IT operations and appointing co-CIOs to support its shift into a more diverse financial services firm, the company said last week.

Heading the IT group will be co-CIOs Mok Choe, who was most recently vice president of application development, and Ray Dury, who has been senior vice president of operations and CIO of Ameritrade's OnMoney subsidiary since 1999. The pair will replace ontgoing CIO Jim Ditmore, who has resigned to pursue other interests, the company said.

Ditmore couldn't be reached for comment, but one analyst said Ameritrade had been happy with the technology and the infrastructure he built. "There is no evidence that people were not happy with him," said Ryan Sailer, an analyst at Kirkpatrick Pettis in Omaha.

Ameritrade spokeswoman Donna Kush said the technology group will pull together the IT departments of Ameritrade and TradeCast, a financial software company it recently acquired, as well as integrate the financial analysis software platforms BigEasy Investor and Financial Passport and the OnMoney account aggregation platform. The department will cut across both private-client and institutional units.

Ameritrade's decision to hire co-CIOs is similar to a move last year by Falls Church, Va.-based Capital One Financial Corp. Capital One co-CIOs Marge Connelly and Laura Olle said the strategy works because they each bring different things to the table. Connelly brings the best practices from the domestic card operations, and Olle has experience in IT systems development.

Similarly, Ameritrade's Choe and Dury have complementary skills. Choe's background is in applications development for financial brokerages, developing high-performance technology systems. Dury's background is in aggregating and financial planning tools and portfolio analytics. Neither Choe nor Dury was available for comment last week.

Kush said Ameritrade decided it was best served by having co-CIOs because of Choe's and Dury's backgrounds, although she said the department might have functioned just as well with No. 1 and No. 2 positions.

She said Ditmore wasn't considered for either position because he decided to leave to pursue interests outside the company. She said Ditmore made his decision last week and will be leaving within two or three weeks.

The division of duties is still being worked out, but "because of his background, Ray will be more focused on portal software and the Passport [financial planning tool], while Mok, for certain, will head up the applications development area," Kush said. "We are still working out who will be in charge of other areas, including enterprise operations, application support and infrastructure."

Within the next month, Choe and Dury will meet with their leadership teams to develop plans for the transition, Kush said. A timetable for full implementation hasn't been set.

Kush said no layoffs are planned in IT or other departments, though employees may be shifted to other positions as the restructuring proceeds. Ameritrade has already laid off more than 400 employees in two waves this year and has seen trading activity slow as the economy has cooled. For the quarter ended March 31, the company posted a $54.2 million loss on revenue of $133.8 million.

Ameritrade isn't the only online broker to adjust to the deflated economic climate by augmenting its transaction-based business with more customer service. San Francisco-based Charles Schwab & Co. recently said it is shifting its focus to become a more full-service operation.

Ameritrade insisted that the restructuring was made more to develop a common vision to help clients achieve their financial goals than as a response to market conditions.

Nasdaq Announces Layoffs, Restructures IT

Blames dip in IPOs for cutbacks

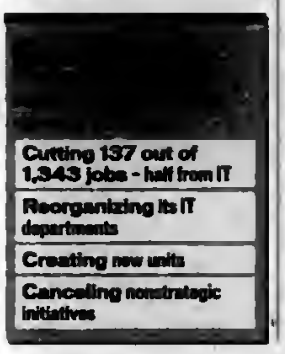
BY LUCAS MEARIAN

Nasdaq Stock Market Inc. last week laid off more than 10% of its workforce, with half of the cuts coming in IT. The stock exchange's first major layoff since the mid-1970s follows a drop in initial public offerings (IPO) due to the economic downturn.

"Nasdaq is affected just like any other business in the U.S. by the economic downturn," said a company spokesman who asked not to be identified. "And for us, initial public offerings have been an important source of revenue, and those have been way down this year."

The spokesman said 137 out of 1,343 jobs are being cut, with IT departments being restructured. The changes will include the creation of new departments and the reorganization of various units within the media relations department.

IPOs provide income for Nasdaq through fees it charges for listing, maintenance and transactions. New listings have been in a downward trend this year. For example, there were 198 new IPOs from Jan. 1 through June 22 last year. During the same period this year, there were just 25, the spokesman said.



In addition, the number of stock transactions has plummeted. In the first quarter of this year, Nasdaq averaged 2.1 billion transactions per day. Last Thursday, there were 1.65 billion trades.

The layoffs follow the installation during the past six months of a new senior management team, including a new CEO and CIO.

The workforce reductions are in "noncore areas," according to Nasdaq. They won't affect Nasdaq's global initiatives, and they won't have an impact on the implementation of key technologies like SuperSoes, Nasdaq's new streamlined execution facility, which will be rolled out July 9; Primex, a new electronic auction system; or SuperMontage, Nasdaq's next-generation trading platform, due early next year.

Target Exec Calls for Single Retail Exchange

But consolidation could take a while

BY CAROL SLIWA

'Stop the Stupidity."

That's what Target Corp. Vice Chairman Gerry Storch dubbed his 75-minute keynote address at last week's Retail Systems 2001 conference in Chicago, where he urged his peers to push for consolidation of the retail industry's business-to-business exchanges.

"Duplicating what we're doing is just stupid at this point. There is no money to be made at all from a public sale of stock in any of these exchanges," declared Storch, a lead founder and board member of the WorldWide Retail Exchange (WWRE).

Several of his retail brethren attending the conference agreed that fewer exchanges would be helpful and consolidation may be inevitable. But they expressed doubt that consolidation could happen within the three-month time frame that Storch said he will pressure others to meet.

Some think it could even take years for the retailers to come together, since the industry's four leading exchanges harbor major differences on issues such as governance, business models and technology.

"It sounds good. It's hard," said Johan Sauer, an official at Transora, a supplier-centric retail exchange in Chicago.

"It is not the time to go for a wholesale integration," said Jeremy Hollows, group director of business-to-business at Paris-based retailer Carrefour SA, an equity partner in GlobalNetXchange LLC (GNX). "Let's get some delivery and prove that exchanges work [before] reorganizing something which is still in its formative stages."

None of the retail industry's four major exchanges is more than 16 months old. San Francisco-based GNX and Alexandria, Va.-based WWRE — which boast some of the world's largest retailers — got started in February and March last year, respectively. Transora and Geneva-based CPGmarket.com SA, which features some of the biggest manufacturers of consumer goods, formed at about the same time.

But they have made just enough progress to create obstacles to consolidation. For instance, the GNX uses technology from Oracle Corp. and Manugistics Inc., among others, and the WWRE primarily uses IBM, Ariba Inc. and i2 Technologies Inc. products.

"Rationalizing the software alone will take six months," said Janet Suleski, an analyst at AMR Research Inc. in Boston. She said the "evolutionary" fusion of technology choices and business processes could take three years.

And that's only the start of the differences (see related story, at right). Even Storch acknowledged that there are other hurdles, from the pride of the parties involved to politics to the lack of a sense of urgency among retailers, many of which still question the benefits of exchanges.

But the vice chairman of Minneapolis-based Target said he remains convinced that exchanges can help retailers cut costs and improve supply chain integration. He said he doesn't care whether a single exchange emerges through a merger or the demise of the existing exchanges.

Storch estimated that the GNX, the WWRE and Transora have spent at least $250 million so far. "And there really isn't much to show for it," he charged. He said he'll be disappointed if some type of consolidation doesn't happen within three months.

"Why spend more money and duplicate even more if everyone agrees this is going to be the endgame?" Storch said. "Let's just go there."

MORE THIS ISSUE

For more news about business-to-business exchanges, **see pages 10 and 11.**

Home Depot Launches Major Integration, CRM Projects

BY MARC L. SONGINI

The Home Depot Inc. announced last week that it's embarking on a sweeping enterprise application integration (EAI) effort as well as pushing customer relationship initiatives that analysts say have lagged in the retail market.

The Atlanta-based retailer of home improvement goods said it has begun a wide-ranging EAI plan to tie thousands of applications, stores and systems together in real time.

Home Depot's EAI implementation will be based on IBM's MQSeries application messaging platform and data integration software from CommerceQuest Inc. in Tampa, Fla.

Among its benefits, said Charlie Weston, director of information services at Home Depot, is that the company will be able to move data contained in MQSeries messages in as close to real time as possible, instead of in batches, which tend to clog its frame-relay network. It will also let Home Depot share data with partners and with its individual stores.

The EAI implementation, which will start in the next few months, will probably cost millions of dollars but should pay for itself in the next several years.

While its EAI initiative is under way, Home Depot is moving ahead with a customer relationship management (CRM) application. The retailer said last week that in September its Tampa call center will begin using applications from Basking Ridge, N.J.-based Avaya Inc. The application will let call center agents access information about product pricing, delivery and installation schedules, said Ed Buter, senior manager of information services at Home Depot. He added that it should increase customer satisfaction, as well as free up store personnel.

This CRM effort is in contrast to the rest of the retail industry overall, which has lagged in using the Internet to offer services such as automated call centers that are standard in other industries, according to Carol Ferrara, an analyst at Stamford, Conn.-based Gartner Inc. Until now, education has been a major focus of retailers, she noted.

That's the case at Home Depot competitor Lowe's Cos. "The biggest opportunity on the Internet is to educate the customer and make them ready to make buying decisions," said Matt Deeter, vice president of Internet operations at Lowe's. "People really like to go into a showroom setting and touch and see what they are buying."

However, Deeter said the Wilkesboro, N.C.-based retailer will soon go live with an integrated, automated e-mail and direct mail campaign management system.

He said Lowe's has had a call center for a year, using applications from Remedy Corp. in Mountain View, Calif. The center can handle queries over the phone and via e-mail. Lowe's has tested chat room capabilities, but customers prefer to stick to e-mail, said Deeter.

JUST THE FACTS

Expected Benefits:

Home Depot's EAI implementation will:

- Move data in close to real time
- Share data with partners and stores
- Free up store personnel

Consolidation of Exchanges Faces Many Obstacles

If they choose to consolidate, the retail industry's business-to-business exchanges may have to confront a number of hurdles – from their differing technologies and business models to potential government regulatory issues.

The GNX and the WWRE, for instance, operate on different business models. The for-profit GNX has eight equity members that have pledged a collective $260 billion in purchases to the exchange. Meanwhile, the WWRE, which operates on a cost-recovery model, has 53 members that haven't been required to make any such commitments.

That's not to mention the difference in upfront investments. One GNX member, who asked not to be identified, noted that one exchange has spent far more than the others to ramp up. "If someone's put in 75% of the funding already, they're going to want 75% of the conglomerate," he said.

Another looming issue could be government scrutiny. Federal Trade Commissioner Mozelle Thompson wouldn't say whether a consolidated retail exchange would draw the Federal Trade Commission's (FTC) attention, but he did say that he found Storch's statement "interesting."

"I think we would look at, for example, whether by acting together the retailers were engaging in price fixing or collusion, signaling other forms of anticompetitive behavior," Thompson said.

It certainly wouldn't be unprecedented for the FTC to look into a business-to-business marketplace among giant corporations. The Big Three automakers' Covisint LLC joint venture drew the FTC's attention, for example, but the marketplace ultimately passed muster when the automakers agreed not to engage in any joint purchasing, Thompson noted.

– *Carol Sliwa*

Health Start-up Taps ASP for Web Site Operations

Nutrition company says outsourcing operations will speed time to market

BY JULEKHA DASH

An online nutrition start-up plans to speed the time it takes to bring its services to market by turning to an application service provider (ASP) to host and manage the Web sites it develops for its customers, the first of which went live last month.

Custom Nutrition Services (CNS), which develops customized nutrition programs for physicians, consumers and employers, last week announced that it has outsourced its Web operations to Frontera Corp. in Los Angeles.

CNS shares the revenue accrued from the Web sites it designs for companies, such as the one that went live last month for Pritikin Longevity Center (*www.pritikinathome.com*), which operates health and wellness facilities in Santa Monica, Calif., and Aventura, Fla. Therefore, the longer CNS takes to complete a site, that's "revenue missed," said Jason Brown, CEO of the Carlsbad, Calif.-based start-up.

Health care start-ups are expressing more interest in ASPs because it's the "fastest way to get up and running" and get Web-based support, said analyst Richard Telesca of Cambridge, Mass.-based Giga Information Group Inc. It's crucial for a start-up to get its services into the market quickly in order to "get a jump on competitors," said Telesca.

A new company can also "avoid large upfront capital expenditures," and instead pay a monthly fee, said Jessica Goepfert, a senior analyst at IDC in Framingham, Mass.

But in any outsourcing deal, a customer runs the risk of losing control over its operations.

Goepfert said that before selecting an ASP, users should look for a vendor that can meet their needs several years down the road. They should also consider the vendor's financial well being, particularly as venture capital funding becomes scarce, she added.

CNS used personalization technology from BroadVision Inc. in Redwood City, Calif., and an Oracle database to create an off-line template of the type of Web portal it wants Frontera to create, explained Brown.

He said Frontera will host sites for an alternative medicine client and a pharmaceutical company, both of which will be announced within the next several weeks.

Vendors Offer HIPAA Testing, Certification

Move aims to help smaller companies with compliance, but some say they're not ready

BY JULEKHA DASH

LAST WEEK, two vendors teamed up to launch a software testing and certification service to help health care organizations meet the requirements of major legislation that will affect electronic transactions within the industry.

Some health care users said the partnership between Foresight Corp. in Columbus, Ohio and Claredi Corp. in Salt Lake City could help organizations with fewer resources prepare for the Health Insurance Portability and Accountability Act (HIPAA).

But others said they aren't sure if they will subscribe to the service because they are still in the planning stages for compliance with HIPAA.

"At an organization of my size, there are plenty of resources so that I can do that on my own," said Greg Walton, CIO at Carilion Health System, a group of 11 hospitals based in Roanoke, Va.

But Walton, who is also chairman of the Chicago-based Healthcare Information and Management Systems Society, said he thinks a smaller organization could benefit from having a third party review its HIPAA preparations.

Both Claredi and Foresight are offering certification and testing services to ensure that organizations are in compliance with federal standards for electronic data interchange (EDI).

In August last year, the government announced that health care organizations must use ANSI X.12, the standard EDI format, for processing claims, authorizing referrals and handling administrative tasks, as part of HIPAA. Health care groups have until October 2002 to comply.

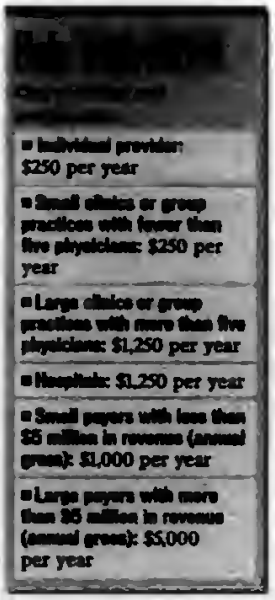
Still in Development

Only one other group, The Electronic Healthcare Network Accreditation Commission in Middletown, Conn., offers HIPAA testing and certification, according to Wes Rishel, an analyst at Stamford, Conn.-based Gartner Inc.

Daniel Bourque, senior vice president at VHA Inc., an Irving, Texas-based cooperative of community-owned health care organizations, said he isn't sure whether some health organizations will be interested in "turning over [HIPAA testing] to somebody else," especially when many of them have already designated a compliance officer.

But Skip McKinstry, vice president of marketing at Claredi, said the advantage of the certification service is that it lists any errors in an organization's software and tells in "what line of code it exists" and how to resolve the problem.

Patrick Grotton, CIO at Mercy Hospital in Portland, Maine, said his organization may get a third party to assess its HIPAA systems. But it's "still early to have someone come in and do it," because the system is still in development, Grotton said.



MORE ONLINE

For more HIPAA news coverage, visit our Web site.
www.computerworld.com/hipaa

Florida Internet Facilities Could Help Latin America

BellSouth sets up network access to resolve latency

BY JAMES COPE

In a move aimed at resolving network latency issues in the southeastern U.S. and speeding up Internet connections between the U.S. and Latin America, Atlanta-based BellSouth Corp. last week announced that it has turned on its new network-access point (NAP) facilities in South Florida.

Traditionally, NAPs — also called Internet exchanges — are single physical locations housing routers and switches where major Internet service providers interconnect.

But the new BellSouth NAP, which the company is calling a Multimedia Internet Exchange (MIX), is based on a new distributed optical networking model, with four facilities in Miami-Dade, Broward and Palm Beach counties, said Ralph de la Vega, president of broadband and Internet services at BellSouth.

That will give Florida businesses more flexibility in locating near high-speed connection points. The MIX will also provide redundancy in the event of outages, according to de la Vega.

One of the first customers to benefit from the MIX will be New York-based StarMedia Network Inc., which provides wired and wireless access portals in Latin America.

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COMPAQ

BRIEFS

Microsoft Releases C# Via 'Shared Source'

Microsoft Corp. last week announced plans to team up with Ottawa-based Corel Corp., a former rival, to build a "shared-source" implementation of its C# programming language and a companion runtime environment – two key pieces of the software vendor's new Internet-based .Net computing services strategy. Microsoft officials said the shared-source-code versions of the software will run on Windows and the open-source FreeBSD operating system but will be available only for noncommercial use. Microsoft plans to send the implementation to ECMA, an international standards organization in Geneva. The implementation could be available by the first quarter of next year, depending on how quickly it gets ratified by ECMA.

Standards Set on Wireless Advertising

The Wireless Advertising Association (WAA) last week unveiled standards for posting advertisements to mobile and wireless devices. For example, the standards say that Short Messaging Service ads should be 100 characters long. The guidelines are expected to help advertisers, ad agencies and online publishers produce advertising content in somewhat uniform ways, allowing the production process to run more smoothly, according to WAA officials in San Francisco.

VA Linux Drops Hardware, Some Staff

Linux server and software vendor VA Linux Systems Inc. is dropping its systems hardware business to focus on software and services. The Fremont, Calif.-based company said last week that it was changing course to stem operating losses and increase cash flow to keep the company alive. About 35% of the company's 436 workers will be laid off under the restructuring.

Covisint Focuses on Tech Integration

But automakers pursuing targeted supply chain projects in the meantime

BY LEE COPELAND GLADWIN

Automotive procurement exchange Covisint LLC last week inked a critical deal with webMethods Inc. to integrate its growing list of technology products and platforms.

Covisint wants to create a central integration hub that links to its diverse application set and provides a single "on-ramp" to suppliers, said Dan Skrbina, lead integration architect at the Southfield, Mich.-based business-to-business procurement exchange. The first phase of that work is slated to be completed in the next 30 days, using software tools and services from Fairfax, Va.-based webMethods.

Once that has been accomplished, suppliers should be able to access Covisint's internal applications, such as Pleasanton, Calif.-based Commerce One Inc.'s procurement system and Oracle Corp.'s enterprise resource planning (ERP) system as well as project development tools, product visualization tools and supply chain execution software from other vendors.

Too Little, Too Late?

Still, that might be too little, too late. Dan Garretson, an analyst at Forrester Research Inc. in Cambridge, Mass., said Covisint's ongoing integration woes and limited service offerings spell trouble for the fledgling exchange.

"They've been in existence for a year and a half, but they have no real product offering other than auctions," he said. "As a result, a lot of projects [being conducted by the automakers] are going on in parallel, which reduces the critical role that Covisint will play."

For example, Stuttgart, Germany-based DaimlerChrysler AG is rolling out an Advanced Product Quality Planning (APQP) business package from Indianapolis-based Powerway Inc. to 1,000 of its suppliers. The secured Powerway system is meant to provide the automaker's suppliers with Web-based access to and analysis of the complex and constantly changing APQP requirements for new parts.

At DaimlerChrysler's urging, Covisint also struck a deal to partner with Powerway.

The Covisint partnership has a muddled history. General Motors Corp. and Ford Motor Co. originally sought to operate competing automotive procurement marketplaces but scrapped those plans. Instead, they combined their efforts with those of DaimlerChrysler to make Covisint.

Covisint recently won a key contract with Delphi Automotive Systems Corp. to build a supplier portal for the Troy, Mich.-based parts maker.

Rather than integrate its applications with those of suppliers and other vendors, Covisint must also offer its own set of mission-critical applications, which is something it's lacking, analysts said.

"The question remains whether Covisint will have the time and resources to [create compelling applications] before the automakers get tired of waiting and do stuff on their own," said Kevin Prouty, an analyst at AMR Research Inc. in Boston.

Under the Hood

Covisint will use software and tools from webMethods to provide integration among a smattering of applications, including:

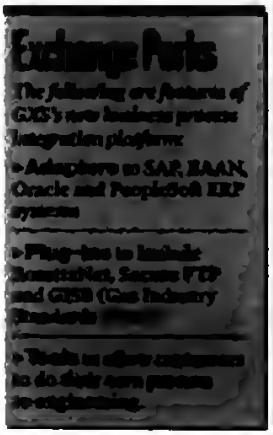
- An ERP system from Oracle
- A procurement and auction platform from Commerce One
- Project development tools from NexPrise Inc.
- Product visualization tools from Engineering Animation Inc.
- Supply chain execution software from SupplySolution Inc.

Continued from page 1

Automation

include procurement workflow, warehouse logistics, exception handling, electronic payments, materials planning and project management.

"Even though two trading partners get transactions flowing between them, they still have many places where humans have to get involved, because the processes can't handle exceptions," said Steve Scala, vice president for integration solutions at Gaithersburg, Md.-based GXS.



The company isn't alone in trying to tackle that problem. Two weeks ago, Pleasanton, Calif.-based Commerce One Inc. released its latest procurement software with specific upgrades for exception handling. SAP AG last year released collaborative business maps to help its customers link enterprise resource planning (ERP) systems to one another.

"What you're seeing is a desire by companies to put the same degree of emphasis on working with each other as they once did for internal processes," said Laurie Orlov, an analyst at Forrester Research Inc. in Cambridge, Mass. "This is where the next frontier really is. Companies have probably gotten as efficient as they're going to during the ERP era. Now they have to streamline how they work with others."

However, Orlov said it will be difficult to establish standard business processes for multiple enterprises.

"You're talking about something that's of a higher order than data, but it still incorporates data," she said. "And there isn't even agreement on standardized data in many cases."

GXS plans to do the process-mapping work on a custom basis, linking two trading partners at a time or perhaps creating a trading hub where multiple suppliers can share processes with a single buyer.

Among the partners in this venture is Enterworks Inc. in Ashburn, Va., which provided the software to automate workflow tasks. New York-based PricewaterhouseCoopers will act as a systems integrator on individual projects.

GXS users who opt for the service will pay $150,000 for the software package, and consulting fees will vary according to the project.

As for how robust the processing-mapping can be, Scala said there's no real way to know. "It's a brand-new area, and we're really going to have to see how far customers want to take this," he said.

Study: Firewall Appliances Back in Vogue With Companies

WatchGuard No. 1 in market 'sweet spot'

BY DAN VERTON

Small and medium-size companies last year spent more money on hardware-based firewall appliances than on software-based systems, helping WatchGuard Technologies Inc. remain in the No. 1 position in the most competitive segment of the firewall market, according to a new analyst report.

The study by IDC, "Return of the Black Box: Firewall/VPN Security Appliances Unleashed," concludes that for the first time, firewall appliance revenue last year, coming in at $942.8 million, surpassed software-based firewall revenue.

In addition, WatchGuard in Seattle won the top slot in the $1,000-to-$5,000 firewall appliance market — the "sweet spot" in the market — for the second year in a row, according to Framingham, Mass.-based IDC. WatchGuard captured a 23% market share and earned $60.7 million in worldwide revenue.

While software-based firewalls characterized the market in the mid-1990s, the growth of small and medium-size businesses and remote offices has fueled a shift away from large enterprise software-based firewalls to simple hardware devices, said IDC analyst Charles Kolodgy. "Appliances are easier to use and install, and there is a lot of choice out there in the market," according to Kolodgy, who co-authored the report.

Although large enterprises used to drive the market for software-based systems because they had the resources to manage those systems, smaller businesses prefer "a box that is preconfigured," he said.

There are currently about 20 major firewall appliance vendors that users can choose from, said Kolodgy.

"People don't generally have the personnel with all of the hardware and software skills that are needed, [and] they are looking to cut costs wherever they can," said Todd Hooper, vice president of business development at WatchGuard.

Thys Coetzee, director of information systems at Zinpro Corp., an animal health products manufacturer in Eden Prairie, Minn., said his company uses WatchGuard appliances for firewall and virtual private network (VPN) authentication services.

"By taking advantage of existing infrastructure, we can expand our WAN at very realistic costs," he said. "The improved WatchGuard systems dramatically increase encryption throughputs [and] scale from the [small office/home office] location to the enterprise headquarters, providing security and communications at affordable levels."

Practices More Important

But not everybody is enthusiastic about the growth of the firewall appliance industry, which IDC predicts will grow to $4 billion by 2005.

"An entire technology industry is being built around the incorrect notion that network security can be achieved by the purchase of more hardware and software, including the appliances cited by IDC," said Tim Bass, a longtime security consultant for the U.S. Air Force and now CEO of The Silk Road Group Ltd., a network security consulting firm in Centreville, Va.

"The vast majority of good security measures can be achieved without hardware or software purchases," he said. "No amount of hardware or software can compensate for substandard practices."

VENDOR	AVERAGE PRICE	MARKET SHARE
WatchGuard Technologies	$2,882	
Nokia Corp.	$2,444	
SonicWall Inc.	$1,555	
Cisco Systems Inc.	$1,136	

SOURCE: IDC

Continued from page 1

EDI/ebXML

flavors of electronic data interchange (EDI), announced last week that they will join the Electronic Business XML (ebXML) initiative to establish a set of core components for global business-process integration.

Business processes are functions that occur after data is exchanged from company to company. Much of e-commerce to date has focused on companies being able to talk with one another, but the EDI and ebXML bodies said they hope to standardize much of the way companies work with one another during the next two years.

"I never understood the us-against-them assumptions," said David Barkley, director of e-commerce relationships at home mortgage provider Freddie Mac in McLean, Va., and chairman of ASC X12. "We need to complement each other, not head off in different directions."

Ralph Berwanger is the ambassador for standards at e-commerce network provider bTrade Inc. in Irving, Texas, and a participant in both the ASC X12 and ebXML standards bodies. He stressed that unless EDI and XML can find points of convergence, a new standard will develop during the next 10 years and "we'll have to reinvent the wheel again."

By October, the EDI and XML standards groups plan to identify a set of business-process core components that can be standardized. Berwanger noted that ASC X12 has 313 different business-process messages, from invoices to health care claims to requests for queries, that could be recast in XML.

Transportation, finance and other industry groups will work on identifying key process issues that could then be folded into a set of global core components, which will take about two years, according to Berwanger.

"The key is that if you get the business processes defined, then they can function separate from the syntax of the messages," he said.

"Collaborative commerce is not going to work without something like this," said Bob McCullough, an analyst at Hurwitz Group Inc. in Framingham, Mass.

Kip Martin, an analyst at Meta Group Inc. in Stamford, Conn., called business-process definitions a way "to move beyond technology and get at the way companies are run."

Martin also said that common ASC X12/XML processes would allow companies to better tie together their legacy systems.

McCullough agreed.

"Nobody would realistically replace their legacy systems solely for the purpose of e-commerce, but they do need to figure out a way of using those systems as technology continues to change," he said.

Who's Who in Standards

Three major standards organizations are joining forces to create business-process standards. Here's who they are, plus some other major players that have made contributions:

Data Interchange Standards Association – Parent of the Accredited Standards Committee X12, a cross-industry, U.S.-based EDI body accredited by the American National Standards Institute.

United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) – International body that sets international EDI standards relating to the trade of goods and services as UN/EDIFACT. UN/CEFACT is also shepherding a new ebXML standard.

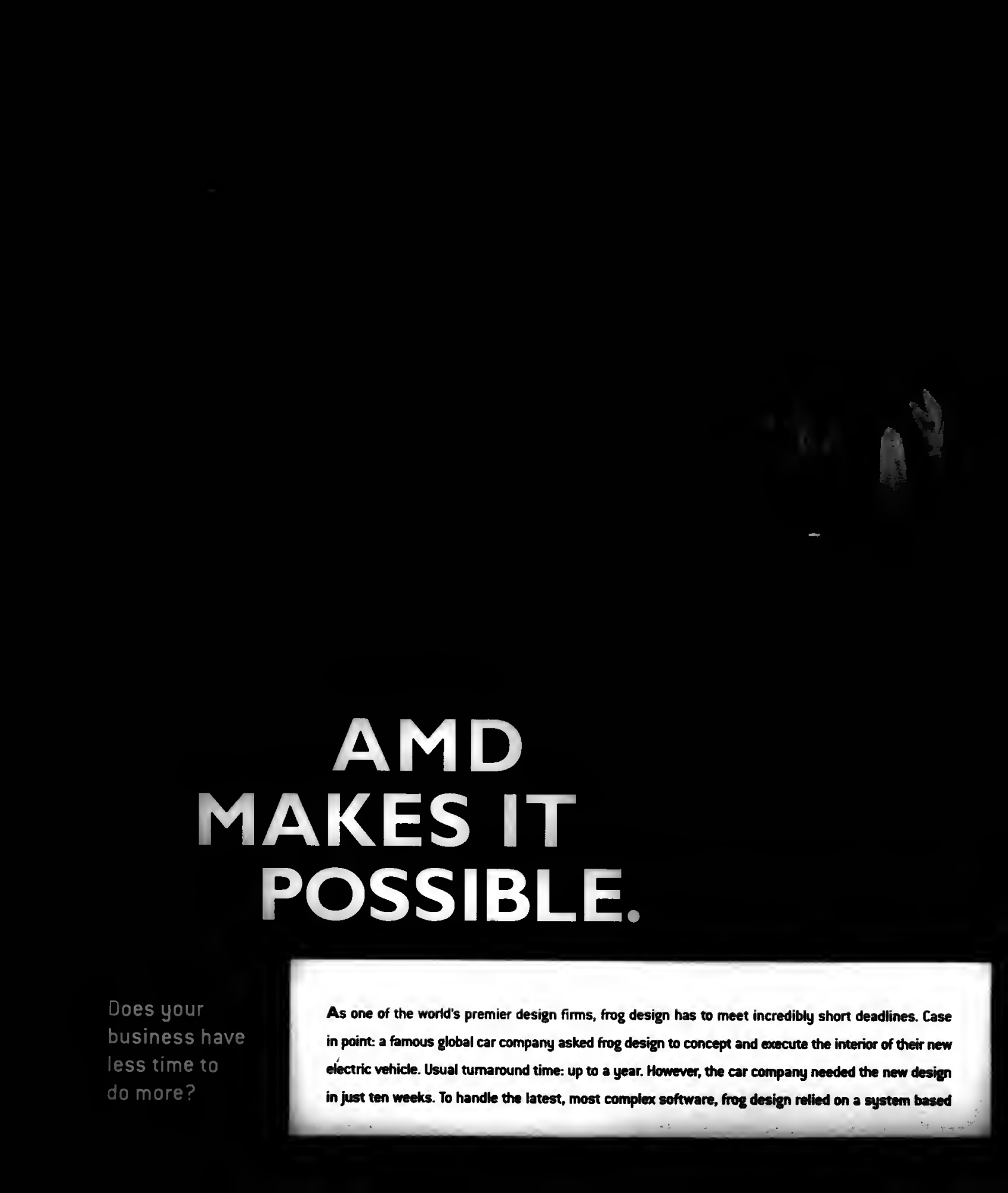
Organization for the Advancement of Structured Information Standards – Helped create ebXML specifications and is involved in attempts to create common business-process interfaces with the two organizations above.

RosettaNet – A consortium of high-tech companies looking to form a common e-business language, aligning processes among supply chain partners on a global basis. The group has agreed to share messaging protocols with ebXML.

World Wide Web Consortium – Curators of the Simple Object Access Protocol used by ebXML and RosettaNet.

Business Process Managing Initiative – Consortium that created the Business Process Modeling Language, which uses XML tagging schema to define business processes.

Object Management Group Inc. – Vendor-neutral group in charge of Unified Modeling Language, a language for specifying, visualizing, constructing and documenting the artifacts of software systems and for business modeling and other nonsoftware systems.



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AMD

BRIEFS

Tech Czar Nominated

President Bush last week announced that he will nominate the director of Brookhaven National Laboratory to lead the White House Office of Science and Technology. John H. Marburger III, 60, has led the Brookhaven lab, in Upton, N.Y., since March 1998. The nomination is now headed to Congress.

Visa Security Software

Visa International Inc. in Foster City, Calif., last week announced the worldwide rollout of new payer-authentication software that it developed with help from more than 60 vendors, including IBM, Microsoft Corp. and Oracle Corp. IT managers in hundreds of banks representing 50% of Visa's card issuers will now be faced with installing the 3-D Secure 1.0 specification over the next 18 months.

New Domains Go Live

The first two of the seven new top-level domains approved for addition to the official Internet domain name system became legal – though not really operational – last week, after the U.S. Department of Commerce gave the go-ahead for them to be activated. However, the Internet Corporation for Assigned Names and Numbers (ICANN) said the .biz and .info domains will initially be used only for informational Web sites launched by the two companies chosen to manage the registries for the new top-level domains. Actual Web sites using .biz and .info likely won't go live until at least September, ICANN said.

Exchange Service Pack

Microsoft Corp. last week released the first service pack for its Exchange 2000 server. Most important is Service Pack 1's support for Windows 2000 Datacenter Server, said Mark Levitt, an analyst at Framingham, Mass.-based IDC. The release also includes Outlook 2002 for Windows and Outlook 2001 for the Macintosh and migration tools.

Oracle to Let Users Host Own ASP Servers

Intent is to keep data close to home

BY MARC L. SONGINI

ORACLE CORP last week added a new twist to its online application hosting service, announcing that users will be able to run the software on their own servers while Oracle handles the administration and support work on a remote basis.

The offering is designed to make application hosting more appealing to users who don't want important business data stored on systems they don't control, Oracle said.

"There are still a lot of companies that want to have their data sit on a server close to them," said Timothy Chou, presideot of the software vendor's Oracle.com hosting unit, in a statement.

Like other application service providers (ASP), Oracle previously required users to let it house and manage the full hardware/software combination for applications Oracle hosted. But the company is now offering certified configurations of its Oracle E-Business Suite applications through server vendors for use within corporate data centers.

Compaq Computer Corp. is the first hardware vendor to make the off-site hosting configuration available, for use with its ProLiant DL580 servers.

Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif., said Oracle is pushing harder on the ASP front than application rivals such as SAP AG or Pleasanton, Calif.-based PeopleSoft Inc. Oracle wants to "get out of the business of selling and supporting multiple installations running on multiple [hardware] platforms," he said.

Oracle's plan is a sound one, Greenbaum said. But he added that the software vendor still has to "fight a lot of institutional inertia" on the part of users.

Oracle has boasted that it has 125 hosting customers worldwide, including Philadelphia-based insurer Cigna Corp. and Toronto-based Bank of Montreal. But in a recent survey by Boston-based Aberdeen Group Inc., members of the independent Oracle Applications Users Group indicated that they held a lot of skepticism about the ASP approach.

Topping the list of reasons was a concern that relying on a hosting firm would leave companies with no control of critical business processes.

For a firm that needed little customization, the ASP system might make sense, said Raman Batra, an IS manager at Austin, Texas-based Legerity Inc., a maker of communication chips. The company went live with Oracle's E-Business applications for human resources and financial reporting last year. "[Our] business needs are not as cookie cutter as an ASP-hosted solution," he said. "The cost of outsourcing would not make business sense if it could be done in-house."

Continued from page 1

Compaq

All three operating systems will be ported to Itanium by 2004 so users can run their applications unchanged on the new processors, the two companies declared. Until then, Compaq said, it will continue with all previously announced upgrades.

The move gives users who now run applications on AlphaServers an industry-standard platform on which to expand their applications, users said. "It was an excellent and gutsy muve overall," said Joseph Pollizzi, president of Encompass, a Compaq user group in Chicago.

Confidence Builder

Last week's announcement "says to me that Compaq is committed to 64-bit systems and a smooth migration for existing users," said AlphaServer user Sean Nolan, chief technology officer at Seattle-based Drugstore.com Inc. "The selectiun of Intel as a partner [alsol gives me a great deal of confidence." Nolan said he had been concerned about Alpha's declining market share.

As part of the announcement, Compaq said it would transfer key parts of the compiler technology and tools developed for Alpha to Intel under a multiyear agreement. Compaq also announced that it would stop designing and building new Alpha processors by 2003.

Compaq's NonStop Himalaya fault-tolerant servers, which are currently based on the MIPS microprocessor architecture, will also be switched to Itanium in the next three years. Compaq acquired Alpha technology as part of its 1998 purchase of Digital Equipment Corp. It acquired the Himalaya line a year earlier when it bought Tandem Computers Inc.

Compaq's strength is in the high-volume mass market, and some high-end users have been concerned that the company wouldn't pay as mucb attention to low-volume products such as the Alpha line.

Compaq's decision to consolidate all of its server development on a single processor technology should eliminate most of those concerns, said Howard Elias, senior vice president at Compaq's business-critical server division. Transfer of Alpha technology to Intel will also accelerate Intel's development road map for the 64-bit Itanium processor, he added.

Alpha chips have long been considered industry leaders in terms of raw performance, but a lack of software support, inept marketing and premium pricing combined to kill its chances, analysts said.

Though the Alpha line was profitable, only about 800,000 AlphaServer systems have been installed in the eight years the processor has been around. That's roughly one-tenth of what Digital had once hoped to sell in that time frame, said Terry Shannon, editor of "Shannon Knows Compaq," an Ashland, Mass.-based newsletter.

Last week's transition plans appear to be an early concession by Compaq that Itanium will eliminate much of the performance edge that had been a major reason for keeping the chip alive, Shannon said. Because of that, "they clearly felt there was no need to spend $250 million annually on the Alpha program," he said.

Smooth Switch

What the Compaq/Intel agreement means for users:

IN THE SHORT TERM

- Compaq's plans to upgrade the current high-end AlphaServer GS Series with a 1-GHz Alpha chip this summer remain unchanged.
- Compaq will proceed with the planned shipping late next year of its next-generation EV7 Alpha chip.
- New MIPS-based NonStop Himalaya servers will continue to be designed before the Itanium migration.

IN THE LONG TERM

- Compaq will port Tru64 Unix, OpenVMS and NSK systems to Intel's Itanium.
- Compaq will transfer key Alpha compilers and tools to Intel.
- Alpha and Himalaya servers will be cut over to Itanium. Compaq will support all architectures for the foreseeable future.

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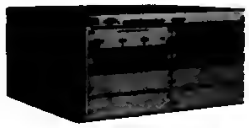

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Casinos Hit Jackpot With Customer Data

CRM leaders keep detailed dossiers on loyal gamblers

BY KIM S. NASH

WHILE THE rest of corporate America is waking up to the value of truly detailed customer information, the neon-lit enclave of casino gambling is already taking it to unmatched levels.

Socioeconomic databases, loyalty cards, the cross-matching of credit card data with other files — they're all at work in the gambling business. These aren't things that supermarkets, banks or retailers don't do. But casinos have become masters of customer relationship management (CRM), having mined more complex customer data on a larger scale for a longer time than just about any other industry.

In its latest annual report, Harrah's Entertainment Inc. bragged, "We know what our customers like," then provided examples of the kind of detail the company tracks. "Tom likes NASCAR, Clint Holmes, thick steaks. Joyce and Ted like oceanfront views, barbershop quartets, Elvis slots. . . ."

Native American-owned Foxwoods Resort Casino can parse its 200GB customer database, match it against third-party demographic data and tell whether a patron has kids or how much he makes per year. If he spends $100 or more daily at Foxwoods, he gets the red-carpet treatment.

"We know who these people are and cater to them. We make sure they have flowers in the room, a drink in the hand and reservations at the restaurant," said Brian Charette, director of gaming systems at the $1.2 billion Foxwoods casino complex in Mashantucket, Conn.

Loyalty cards are the key. At a typical casino, when a player swipes his card at a table game or slot machine, a network of databases jumps into action. The system captures, among other things, how long the person plays, how much he wins and loses and what his betting strategy is. It can compare statistics from previous visits and provide real-time hints to casino workers about how to treat a given customer, based on how much he is worth to the company.

Customers, meanwhile, collect card points as they gamble, eat, shop or see shows, which they redeem for prizes, such as free hotel rooms or tickets to hot shows.

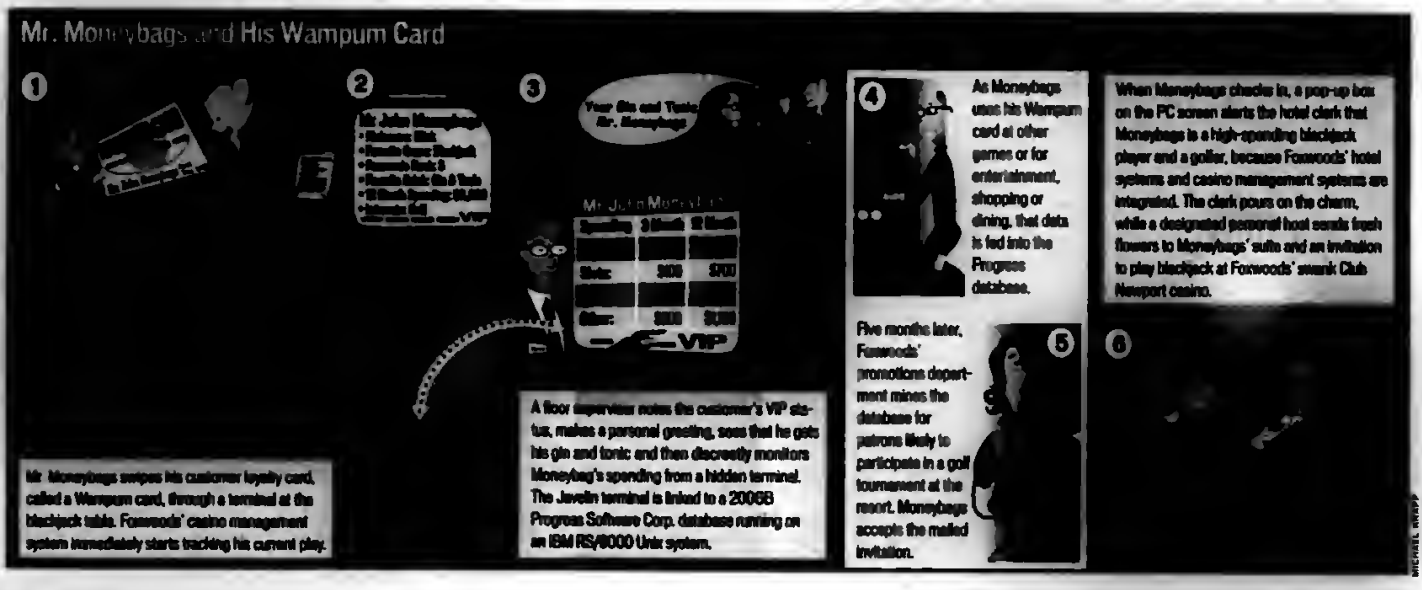
MGM Mirage last year gave out $286.3 million in such complimentary items.

"Our target is mass-producing a high-roller experience for the common person," said Glenn Bonner, CIO at MGM Mirage in Las Vegas. "We want to provide you with the best experience imaginable, so that you'll want to come back."

The strategy pays off. Visitors to MGM Mirage last year spent $3.5 billion at its 10 properties. The company posted $160.8 million in profits — $18 million more than Las Vegas-based Park Place Entertainment Corp., the biggest casino owner in the U.S.

MGM Mirage can sort its 6TB of data on Microsoft Corp. SQL Server databases to tell you which of its 9 million customers are poker players who also like onions on their hamburgers. "Whatever they do gets tracked and logged into the system," Bonner said.

It's not clear whether an onion preference correlates with the profile of a high roller.



GLENN BONNER, CIO at MGM Mirage, says the company sorts 6TB of data on 9 million customers to track their spending habits.

But it may, and cataloging it now means that the data will be available should anyone find a reason to mine it.

MGM's rival, Harrah's, doesn't carry it that far, but it hasn't deleted any of the information it has gathered since 1995 — on 23 million people. Eight million of those carry Harrah's Total Rewards cards.

As Harrah's CIO John Boushy put it, "We decided we would never be able to anticipate the questions that marketing might ask, so we keep all the data."

The giant-vacuum approach to data collection that pervades the casino business doesn't bother Robert Walasin, a doctor in Chapel Hill, N.C. He gambles three or four weekends per year, mostly at Trump Taj Mahal Casino Resort in Atlantic City.

Walasin likes the free hotel rooms and meals he gets for gambling — about $2,000 per trip. The data the casino gets in return doesn't matter to him; he figures a lot of it's out there anyway.

"Why would one have any more paranoia about The Taj having information," he said, "than if Sears or AT&T had that information?"

Indeed, casinos do what other industries do but are more sophisticated about it, partially because of the unforgiving conditions in which the technology has to perform, said Dan Vesset, an analyst at IDC in Framingham, Mass.

Casinos are always open, so there is no downtime for backups and database updates. To make CRM work, casino employees need data as soon as possible — while the customer is standing in front of them. Foxwoods, for example, gets an average of 45,000 visitors per day. An Ethernet network quickly moves that customer data to touch-screen terminals used by pit bosses, hotel clerks, restaurant hostesses and others (see diagram).

Strict gambling laws mean casinos must be more careful marketers than other kinds of companies, Vesset said. Financial institutions, for example, routinely send credit card come-ons to minors, even toddlers. But casinos don't send direct marketing material to people underage. "They use their data much more carefully," he said.

In some ways, casinos are more mindful of privacy than other companies.

Foxwoods, for example, purposely doesn't link husband and wife records, mainly to avoid problems during divorce or when "one doesn't want the other to know what they're doing," Charette said.

New York-New York Hotel & Casino, which is owned by MGM Mirage, stipulates in its membership agreement that points "may not be transferred upon death or as part of a civil or domestic relation matter."

Unlike other companies, few casinos sell their customer data; it's more valuable kept close. "We like to describe system criticality this way," said Charette. "The systems are responsible for supporting $138,889 [in revenue] per hour."

At Harrah's, CRM is so strategic that the company has won seven patents for various parts of its customer tracking systems.

One critical patent covers Harrah's method for consolidating gambling and hospitality data from its 21 properties. If someone visits Harrah's Las Vegas, then the nearby Rio, then Showboat Atlantic City — all owned by Harrah's — information about those activities is culled from local databases and consolidated into a central patron database. This gives Harrah's a fuller view of individual customers, Boushy said.

Meanwhile, a string of mergers in the past three years means just four casino kings — Harrah's, MGM Mirage, Park Place and Mandalay Resort Group — now control 60% of the $26 billion industry.

In this situation, Boushy said, Harrah's patents give it a business edge.

Any competitor that wants to consolidate data from their own multiple properties "has to come talk to us or run the risk of a lawsuit," Boushy said. "We created a strategy that others thought was nuts at the time, and [we] want to garner benefits from it."

Harrah's may license its intellectual property or settle on some other form of compensation, Boushy said.

Foreshadowing what's to come in CRM, some casinos plan to add wireless technology and advanced storage-area networks (SAN) to the mix.

MGM Mirage is working directly with Dell Computer Corp. to make SANs more flexible. Bonner said he would like to switch the casino systems to alternate servers when he upgrades host servers and have the SAN running all the while. Right now, the SAN must come down during server upgrades.

Harrah's wants to become "totally device independent," Boushy said, to let users access the company's extensive databases via PCs, handheld computers, even cell phones.

"Managing relationships with customers is incredibly important to the health of our business," he said. "We'll apply whatever technology we can to do that."

> We make sure they have flowers in the room, a drink in the hand and reservations at the restaurant.
>
> BRIAN CHARETTE, DIRECTOR OF GAMING SYSTEMS, FOXWOODS

MORE THIS ISSUE

Casino operator Harrah's Entertainment has turned its IT department into a consultancy
See page 34.

CRM: A Four-Letter Word?

As potentially valuable as it may be, CRM software has been oversold.

The technology got one of the lowest satisfaction scores in a recent survey by Boston-based consulting firm Bain & Co. Nineteen percent of the 245 senior managers polled actually dropped CRM projects, compared with an average 9% defection rate for the other management tools in the survey.

Glenn Bonner, CIO at MGM Mirage, said he avoids the *CRM* acronym for fear of scaring executives away from funding a particular project.

"Right now, CRM has both good and bad reputations," he said. "We may be doing a specific component that brings tremendous business benefit, and we don't want any negativity attached to it."

Good CRM is more than gathering loads of facts. It hinges on what companies do with the data.

For example, three or four times per year, Foxwoods Resort Casino holds an invitation-only golf tournament. The promotions department mines Foxwoods' customer data for people likely to accept, knowing that once they come for golf, they'll also spend money eating, drinking and gambling.

After a tournament, records of the golfers' spending are transferred to an Oracle Corp. data warehouse. Using proprietary decision support software, marketeers can analyze how profitable the event was and suggest ways to fine-tune and improve the next one.

– *Kim S. Nash*

Web server farms have always been known for providing high application availability in a cost-efficient manner. Unfortunately, in the past they have also been known for manageability headaches. But no more: Microsoft Application Center 2000 now makes managing Web applications and groups of Web servers as simple as managing a single server.

Part of the flexible Microsoft .NET Enterprise Server family, Application Center 2000 is built to be the heart of a "scale-out" infrastructure model. "Scaling out" is a flexible approach to scalability that involves deploying Web applications across multiple servers to distribute and handle the workload.

Application Center 2000 makes scaling out easier, with unified Web application and server-farm management that simplifies tasks like cluster management and application deployment. Plus, it makes it easy to achieve capacity on demand through automatic replication of applications when you add servers or make changes to existing applications. But simplicity is not all you get: Application Center 2000 offers increased uptime through dynamic load balancing and by having no single point of failure.

MARKET FACT

"The scalability benefits offered by Application Center made it possible to migrate to a distributed Windows® platform. Application Center gives us on-demand scalability and is a powerful tool for managing Windows 2000–based Web server farms."
—Mike Bodnar, Production Services Manager, Terra Lycos

In sum, Application Center 2000 removes the hassle of managing multiple servers separately, while providing the availability and cost-efficiency of a "scale-out" model. Find out how to keep the odds in your favor: visit **microsoft.com/applicationcenter** Software for the Agile Business.

Microsoft

Federal IT Girds For Huge Tax Rebate Mailing

BY PATRICK THIBODEAU
WASHINGTON

If the U.S. government is good at anything, it's issuing checks. But one of the government's largest check-writing undertakings ever will begin this month, when it mails out approximately 100 million tax-rebate checks.

The IT staffs of two U.S. Department of Treasury agencies, the Internal Revenue Service and the Financial Management Service (FMS), have been involved in a process that's set to begin July 23, when federal officials begin printing and mailing out tax-rebate checks. The mailing will continue for 10 weeks, at a rate of about 10 million checks per week.

Officials at both agencies said they're ready.

"We have a lot of experience in making payments for government agencies," said Tony Torrice, chief dishursing officer at the FMS, which began handling check payments for government agencies in 1933.

But, he acknowledged, the tax rebate "is a massive project, and we're not going to underestimate that."

Before the tax cut was approved by Congress and President Bush, the IRS assembled a 15-member team, including programmers, to compile data from approximately 130 million tax returns for the rebates, according to IRS spokesman Antony Burke.

Printing Money

That IRS data was sent to the FMS, which will process and print the checks. Issuing the rebates will cost the agency $49.5 million, with $40.3 million of that amount being used for postage.

The FMS will use IBM mainframes running at about 340 MIPS to create files that will be distributed over a network to regional centers for printing. The laser printers at those centers can print as many as 70,000 checks per hour.

The only change the operation needed was upgrading the connection to the Defense Finance and Accounting Service, the agency that will help print the checks, said John Kopec, executive director of platform services at the FMS. The current 56K bit/sec. connections will be boosted to T1 speeds.

All of this summer's tax rebates are being issued via paper. Although many taxpayers send in their tax returns electronically, federal officials said they have no way of distinguishing between permanent accounts and the temporary electronic accounts set up to handle the returns.

The U.S. government last issued tax rebates in 1975, during the Ford administration. There were about 55 million payments issued at that time.

Billionaire Relentless In CA Takeover Fight

Challenger keeps up bid to replace board

BY MARC L. SONDINI

TEXAS BILLIONAIRE Sam Wyly is continuing his ambitious plan to replace the management of Computer Associates International Inc.

Wyly, who is leading a proxy fight to unseat CA Chairman Charles Wang and the rest of the company's board, said he wants to become chairman himself. He plans to split the software company into four indepeodeot units that serve the fields of storage, security, systems and knowledge management. Wyly sold his own firm, Sterling Software, to CA in March 2000 for $4 billion in stock.

Islandia, N.Y.-based CA, known for playing hardball, has no intention of rolling over and said it will stick to its current business model to "yield substantial dividends." Additionally, the company's management last week stated that it has the support of its major shareholder, Walter Haefner, wbo holds 123 millioo shares, or 21% of CA.

Wyly denounced that news in a statement posted on the Web site of his company, Dallas-based Ranger Governance Ltd. "It is the height of arrogance for Wang and [CA President and CEO Sanjay] Kumar to publicize Walter Haefner's pledge of support as a way to intimidate other shareholders from casting their vote against this inept management," Wyly said. "It is exactly this kind of autocratic attitude that has caused management to ignore and abuse all CA shareholders by destroying shareholder value over the past five years."

Wyly is still trying to sell CA shareholders on his proposition. Last Monday, he weot to Boston to meet with Fidelity Investments, said a Ranger spokeswoman. In a webcast to investors on Tuesday, Wyly cootinued his pitch and said he will need to wio a majority of tbe independent shareholders.

If he is successful in replacing CA's management with that of his current company, Wyly said he will publish a plan withio 60 days oo how the restructuring will play out. Each of Wyly's proposed four units would have its own CEO, and CA's structure would be more decentralized and responsive to customers, he said.

Citing a survey commissioned by Ranger, Stepheo Perkins, one of the proposed new board members, said during the webcast that 46% of CA's customers would like to get out of their commitment with the company. One of the key complaints is that they don't like paying high prices to license CA's flagship management product, Unicenter TNG, because they oever use some parts of it, he said.

The survey was conducted by Penn, Schoen & Berland Associates Inc. and was based on interviews with 60 CA customers, said the New York-based polling firm.

Kumar denounced the survey and said it "only hurts those who are truly committed to building on CA's success in the market — our employees and shareholders." In a statement, CA said a poll it had conducted found that 75% of its clients say they have a "positive working relationship" with the company.

Despite Wyly's success in garnering publicity, analysts said they view his quest as quixotic. "The management at CA is probably one of the most experienced, aggressive and competitive in the software solutions provider space," said Rick Ptak, an analyst at Hurwitz Group Ioc. in Framingham, Mass. "I think they've played in a far bigger arena than Wyly has. CA . . . is based on being fierce aggressive salesmen and competitors, and I don't think anything is wrong with that."

Compaq to Pursue Services

BY TODD R. WEISS

With the computer hardware market floundering, Compaq Computer Corp. is changing its business strategy to focus on IT services in an effort to increase revenue, according to an internal document obtained by *Computerworld*.

Analysts last week characterized the change as a me-too move, following a general trend and the example of IBM, which has been successful with its Global Services unit. One analyst said the change could hurt Compaq's brand, whicb is associated with hardware from desktop PCs to servers.

In an internal memo to Compaq's 68,000 worldwide employees earlier this month, company Chairman and CEO Michael Capellas said Compaq will take the next six months to transform itself from a hardware-centric vendor into a company that offers packages that bundle machines, services and support. That will help the company better serve customers and increase its market share, he wrote.

Compaq reported a net profit of $78 million for the first quarter ended March 31, down from $296 million a year ago. Total revenue for the quarter was $9.2 billion, down from $9.51 billion last year.

"Customers see less and less differentiation in the core technology components," Capellas wrote in his memo.

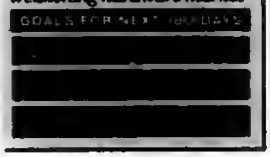
As part of the strategy, Compaq has set aside $500 million to acquire an IT services firm and enterprise services companies in countries where service must be beefed up.

Roger Kay, an analyst at IDC in Framingham, Mass., said there's danger for Compaq in reshuffling its business strategy. Having a well-known, established brand "defines what your company is and does," he said. "The effect . . . if you shift from one thing to another is weakening your brand."

Stephen Lane, an analyst at Aberdeen Group Inc. in Boston, said Compaq's new services road map is oot unique. Like IBM, others are seeking to offer top-to-bottom hardware, software, advice, and consulting and technical services. "There's a good market for doing that right now," said Lane.

Shift in Focus

Compaq plans to change its strategy to cope with the weakening hardware market



BRIEFS

Consulting Cutbacks

Cap Gemini Ernst & Young last week joined the ranks of IT and management consulting firms that are making cutbacks, announcing plans to lay off 2,700 of its 60,000 employees. It said the move was part of a wider cost reduction effort being driven by a "marked slowdown" in new business. The Paris-based company also lowered its revenue forecast for the year by 6% to about $7.8 billion.

Dell Offering Web Caching Software

Dell Computer Corp. said it will offer Web caching software from Foster City, Calif.-based Inktomi Corp. on its PowerEdge servers. Dell said the hardware and software combinations will help reduce bandwidth costs, increase availability on critical Web servers and accelerate delivery. Prices start at approximately $4,500.

Palm Beats Forecasts

Palm Inc. slightly surpassed its own guidance and analyst estimates with fourth-quarter revenue of $165.3 million and a pro forma net loss of $89.2 million. In the same quarter last year, revenue was 53% higher, and the company earned pro forma net income of $17.2 million, a difference of more than 600% compared with this year. But the Santa Clara, Calif.-based company said last week it's on track to turn a profit again next quarter because of inventory reductions.

3Com Posts Loss

Reporting its financial results, 3Com Corp. said it has been hurt by the the technology sector's most far-reaching slowdown ever. The struggling networking equipment maker reported $468 million in revenue for the quarter ended June 1, down almost 40% from $763.7 million in the same period last year. Santa Clara, Calif.-based 3Com posted a net loss of $206 million.

PATRICIA KEEFE

Time of Reckoning

IF YOU'RE A CUSTOMER of Computer Associates, whether by choice or through acquisition, and you've never paid much attention to the internal goings-on and financial statements released by the company — there's no better time to start than now.

As you probably know, CA founder and Chairman Charles Wang is trying to fend off a takeover attempt by Texas financier Sam Wyly and a group of like-minded investors who want to cut up the company and kick Wang out.

PATRICIA KEEFE is *Computerworld*'s editorial director. You can reach her at patricia_keefe@computerworld.com.

Perhaps Wyly, who not so coincidently sold Sterling Software to CA in March 2000 for $3.9 billion, is motivated by seller's remorse. If so, he may find sympathy among those CA customers who have had their own bouts with buyer's remorse. Indeed, in a *Wall Street Journal* article, Wyly counts among his reasons for launching the takeover bid that the vendor is "alienating customers." One of his nominees to CA's board is quoted as saying that customer service at CA is "a critical problem." The firm's checkered history with customer service has been covered extensively in the press and was at one point a lightning rod for many angry customers.

Users may feel different today. In response to Wyly, CA President Sanjay Kumar claims that customers don't want CA broken into multiple units. He says you want a unified solution. I don't know how well CA managed to knit together its tangled web of acquisitions — but you certainly do.

Since both camps claim to have your best interests at heart, now is the time for CA users to band together and start lobbying both camps for changes. Press your advantage with Wang and Kumar to get the concessions, support and product assurances you need in order to go about plotting your future IT strategies.

Make public what you want CA to do. Tell the shareholders and the board what real customers think. The shareholder meeting to elect the next board is scheduled for Aug. 29. And while you're at it, let your peers know what you think on our online forums, where we've launched a discussion thread to address this issue (*www.computerworld.com/caforum*). ▶

PIMM FOX

Microsoft Asking Too Much With XP

ANOTHER PRODUCT, another slap in the face.

Does Microsoft have any idea what's going on in the real world? Or are they living in some kind of biosphere up in Redmond?

Let me be clear so all you FOBs (Friends of Bill) don't overload my Windows 98 operating system with hate mail: I have nothing against Microsoft. Indeed, I always thought Microsoft would wriggle out from under the antitrust case and avoid being split up.

But the planned October launch of Windows XP for consumers and Office XP for businesses seems to be a bald attempt to goose Microsoft's revenue under the guise of customer needs. Also, several features to be bundled in XP could easily reignite antitrust concerns as Microsoft tries to take a bite out of instant messaging, music players, voice and data communications, and network file-sharing.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

By shipping Windows Messaging software with both XP versions, Microsoft is using its desktop hegemony in the same manner it used it to conquer the browser market.

Microsoft claims that it's just giving people what they want. Perhaps. But to take advantage of the less-crash-prone Windows XP system (it uses the more stable Windows 2000 kernel), users will have to buy new machines with XP preloaded.

Microsoft even *recommends* that you buy a new machine rather than install XP over an existing Windows operating system.

So if you're an IT manager, you'll face added hardware costs for Office XP unless your machines have Windows 98 installed, along with 280MB of free space. You'll also have to host training courses to teach the advantages of new icons and windowpanes. Microsoft won't be supplying paper manuals.

But the most irksome part of the XP experience is the seeming disconnect with current economic conditions.

Carl Howe, principal analyst at Cambridge,

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Mass.-based Forrester Research, sums it up best: "No one has a couple of million dollars to seod to Microsoft in this economy."

IT departments have just dealt witb the Y2k scare and the Internet's remake of business computing. Now they're being hit by an economic slowdown that's crimping budgets. PC sales have stalled, and spending on eoterprise software and services is being carefully scrutinized.

And yet Microsoft introduces XP without so much as a nod to the financial constraiots most companies are facing. Thc company has also changed its software-licensing agreemeots, making it more expensive to use Windows. According to Howe, "Microsoft has to sell an upgrade every four years; they're held hostage to their business model." But IT managers don't bave to let themselves be takeo prisoner as well. ◗

BILL LABERIS

Linux Is Full of Fanatics, Potential

BE CAREFUL what you say about Linux. Say the wrong thing, truth or otherwise, and you risk agitating an underworld of zealots. It was never clear if theirs was a true passion for the free operating system or simply a dislike for Microsoft, whicb they felt Linux would destroy.

Whatever the case, the utter overzealousness of the Linux crowd has done a disservice to Linux and to the IT world as well. These misguided souls have consisteotly distorted Linux's capabilities and helped sow confusion among IT over its future viability as a mainstream operating system. As former Gartner analyst Michael Gartenberg wrote [News Opinion, May 28], Linux still doesn't offer compelling reasons to switch from entrenched operating systems, most notably 32-bit Windows.

BILL LABERIS is a consultant in Holliston, Mass., and a former editor in chief of *Computerworld*. Contact him at billl@laberis.com.

While Linux has yet to reach mainstream operating system status, the Linux debate has itself spilled into the mainstream. Last month, Gartner Dataquest released a Microsoft-sponsored study that showed that Linux was being shipped on less than 10% of all new servers, which is an anemic figure wben contrasted with the Linux hype. But those figures collide with data from IDC, which show Linux claiming three times more of the server market.

Those who claim Linux is mainstream or close to it may be right, to some extent, since Linux has shown some characteristics of established software. For one thing, it's been victimized by an Internet worm called Ramen, which wriggled its way into versions of Red Hat's Linux offerings earlier this year, hitting sites, then spreading by attacking servers running tbe same operating system. Then there was a lengthy delay in the release of the Linux 2.4 kernel due to "last-minute stuff," Linux creator Linus Torvalds told his minions in an e-mail. Worms, product delays, disagreements over market share? Sounds mainstream to me.

With so mucb noise and confusion, how do you discern which end of the Linux box is up? With IT budgets tightening and even shrinking, is it time to take a fresh look at an open-source enterprise operating system? Surprisingly, my answer is yes — with qualifications. First, Linux continues to gatber broad industry support far beyond its die-hards. In the past six months alone:

- Sun unwrapped Java for Linux appliances, a potential software platform for businesses and consumers.
- IBM announced its eServer cluster for Linux as part of its ongoing efforts to bring the operating system into the computing mainstream.
- Red Hat brought out new enterprise-class services to simplify systems administration for customers running its software.
- IBM and SAP agreed to deliver the mySAP.com Internet platform oo IBM's big zSeries mainframes that run Linux.
- Oracle added Linux 2.4 support to its 9i application server.

These are major companies making significant commitments to Lioux with the same core product offerings that you can find in just about any major enterprise computing environment. You'd be remiss to oot put Linux on servers in test cells or non-business-critical areas. Just remember that Linux is a niche operating system today and will likely remain so for the foreseeable future. The biggest obstacles to its broad acceptance, as shown in research by Evans Data Corp. and others, are a lack of open-source standards, multibillion-dollar investments in installed proprietary software and investments in training to use that installed base. None of those obstacles is going away any time soon. ◗

READERS' LETTERS

Domain Duplication

FOUR DIFFERENT registries now offer the .shop domain ["New.net Unveils 10 New Internet Domain Names," *Computerworld.com*, June 19]. As a result, numerous domain registrants will now own domains with the exact same Web address. Where visitors will end up, if anywhere, will depend on how those visitors' browsers are configured or whom their Internet service providers prefer. It's a scary situation for domaio registrants.

Joe Alagna
North American marketing manager
CentralNic Ltd.
Chino Hills, Calif.

Consider the Source

I HAVE NO DOUBT that the reason immigration attorney Andrew Wilson holds the opinioo expressed in the column "H-1Bs Are Still Needed, Despite Slower Economy" [News Opinion, June 4] is that his income is suffering. In the past six months, the number of want ads for technical people in *The Atlanta Journal-Constitution* has dropped from three pages to three columns. Into this market we should import even more supply? Get real. I'm the CTO of a technical company and deal with hiring and laying off. The laying-off part is not pleasant. One person we were forced to lay off is very skilled but still looking for full-time work after several months. The problem? He's over 40 and costs about twice as much as a new graduate. On the other hand, I dido't have to check his work every few hours.

Rich Mycroft
Atlanta

The Private Economy

I GUESS Commissioner Thomas Leary of tbe Federal Trade Commission has no clue what the result of the lack of privacy can mean ["FTC Member Says Privacy Concerns Becoming 'Hysteria,'" *Computerworld.com*, June 5]. It could mean that the consumer (you know, those people who make up 66% or more of the economy) might stop giving out any information or valid data. What happens to the much-vaunted business-to-consumer sites then?

David Williams
Dallas

Bravo, Cisco!

EVEN IF Cisco's experiment of paying laid-off workers for working at nonprofits is the idea of a CFO thinking of the bottom line, the people benefiting won't know the difference ["A Ray of Light," News Opinion, June 4]. It's nice to see such out-of-the-box thinking helping people through what can be a very depressing time.

Daniel Megan
Account executive
Boston

Houston's Problem

TWENTY YEARS ago, when I built four data centers and consulted on the design and constructioo of several others, it wasn't standard practice to put data centers or any emergency equipment into a basement or at any level below grade ["Houston Flood Tests Tech Planning," Page One, June 18]. When, exactly, did this practice become "traditional"? Perhaps it's something they do only in Houston, or Texas. (I've only recently relocated here.)

William Blair
Houston

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

JOHN GANTZ

Plan Today for E-Business Future

THERE ARE 11 MILLION Web sites on the planet, but most of them are rudimentary, such as marketing literature for a small business, a simple ordering system or a collection box for e-mails to the customer service department. According to IDC's eWorld 2001 survey, fewer than one in 10 Web sites has any kind of complexity to it, such as commerce and direct connection to an inventory control system.

John Gantz is a senior vice president at IDC in Framingham, Mass. Contact him at [illegible]

That will change within a few short years. If the first wave of Web site development was commerce, for which simply capturing transactions was an accomplishment, then the second wave has got to be supply chain automation, the big challenge in today's business-to-business commerce.

And already, my colleagues at IDC who study the e-business software market see the glimmerings of a third wave: intelligent and collaborative e-business.

The essence of the new applications will be the intelligent combination of content management, analytics and collaboration to the transaction processing function of an e-business application. The analytic and business intelligence function determines what's going on with the transactions; the content management functions alter offerings on the fly; and collaboration allows business partners in the value chain to react in real time to changing business conditions to, for example, forecast demand and schedule logistics.

It may sound pie-in-the-sky, but bits and pieces of this functionality are here with us today. We're already seeing more business intelligence built into both relational databases and Web-based structured query tools, and we're seeing collaboration modules being inserted into content management applications.

This all means something to you. As the center of gravity for delivering e-business functions moves from single applications — ERP, CRM or e-commerce software packages — to the platforms that integrate them, such as an enterprise portal, the way that you specify, evaluate, deploy and maintain software will change.

For instance, you will no longer be able to judge a software package on its merits, but you will have to be concerned with how well it works in concert with others. What does the entire collection do to systemwide performance? How is each piece customizable? Is there an upgrade path, or, two years down the line, are you likely to have a great content management tool with lousy collaboration built in? For a while, you'll need to know which software is *inside* the software you specify — like knowing the difference between Michelin and Firestone tires — to know if the total package will suit your needs. Whose search engine, whose OLAP tool, whose reporting package are bundled in?

Even if you won't be implementing third-wave e-business applications until mid-decade, the software choices you make today will affect the flexibility you will have when that time comes. Even as you're coping with the wave that's now washing over you, you need to prepare for what comes next. At a minimum, you'll need to get more technical and more strategic about product selection. Tomorrow's e-business applications will have lots of moving parts — including some you're installing today. You'll need to keep them all humming. ◗

PIERRE SAMEC

Thinking Ahead On E-Marketplaces

THE FAILURE OF SOME first-generation online exchanges has provided valuable lessons upon which to build the next generation. By fully understanding these mistakes and looking at recently developed technologies, business and IT leaders can make the future generation of marketplaces worthwhile.

To understand the future, let's look at the recent past. In the late 1990s, there was an unprecedented rise of companies, such as Amazon.com and Yahoo. Additionally, the mass adoption of successful consumer applications such as Hotmail and AOL's Instant Messenger led businesses and investors to believe they could also experience tremendous growth in electronic marketplaces. At the same time, Fortune 1,000 companies concerned about the unparalleled market valuations of those marketplaces began clamoring to attach their brand names to newly created e-marketplaces.

Pierre Samec is president and CEO of Acerra Inc., an IT consulting firm in Redwood City, Calif. Prior to that, he was CIO at Ventro Corp., where he built and operated Chemdex.com, a B2B marketplace for large chemical companies that was shut down last December. Contact him at [illegible]

But it didn't work. What happened?

Many reasons can be traced to the limitations of the early technology. Early e-marketplaces had the most advanced technology at the time, but their applications were too costly, too complex and took too long to roll out compared with the expectations set by their B2C predecessors. This meant that potential buyers and sellers didn't participate in sufficient numbers for the model to reach critical mass and become profitable.

There were exceptions. While some functions such as catalog management, complex pricing models and procurement proved their worth, custom-building *all* the necessary functions proved too complex and expensive. In the end, the usefulness of even extremely advanced applications wasn't worth the cost for enterprises to jump on the e-marketplace bandwagon, which led to their disappearance.

But they haven't all gone the way of the dodo. The marketplace will be back. The technologies that powered them have advanced significantly, addressing the pain points, from cost and time to implementation. In the catalog space, for instance, vendors are applying lessons learned from Napster to aggregate real-time, accurate product descriptions at a fraction of the cost per stock-keeping unit, giving buyers dynamic pricing and the availability of information necessary to make buying decisions.

Other notable technology developments have come from application infrastructure providers that are making communication more dynamic and reliable across company networks.

The second significant change is in the evolution of the marketplace itself. In the first generation of exchanges, marketplace operators took advantage of the unfair balance of power between supply chain members to assert their own control, which, in turn, discouraged mass participation. In the new marketplace, each participant is demanding a more inclusive role, and the technology has evolved to meet that demand. Experience has taught us that the marketplace won't succeed unless participants are fully included.

Private marketplaces are growing in popularity because they allow closer interaction and re-establish the balance between buyer and seller. Although private exchanges fall short of the vision to empower all the players involved in the e-marketplace, they succeed in placing the communication exactly where it belongs: in the hands of its supply chain participants.

The next-generation marketplace will empower its members to strengthen their relationships and help them compete with product and organization skills, rather than wrestle with a complex IT infrastructure. By learning from past experiences and embracing recent technology advancements, business and IT management can take a significant step toward realizing the Internet's full promise. ◗

BUSINESS

CHALLENGES IN AFRICA

Africa presents U.S. firms with a wealth of untapped markets. But, warns Africa Technology Forum co-founder Rebecca Enonchong, in addition to bare-bones national infrastructures and a dearth of skilled technologists, there are political land mines that can thwart projects. ▸ 35

CAPITAL PLAN

Think your company is savvy about mining customer data? Check out Capital One. It conducted a staggering 45,000 tests to try to match potential customers to products last year, which could explain why its customer base has more than quintupled since 1995. ▸ 36

GUIDING GEEKS

Stereotypes abound of Web geeks who just want to be left alone. But those stereotypes can be harmful. Many young IT workers are creative and independent, but they still want and need feedback and guidance from managers. ▸ 38

SAVVY SLACKERS

Efficiency is a good thing, right? Not necessarily, says IT consultant Tom DeMarco. The downside of efficiency, he says, is that workers become so busy that creativity and flexibility fall by the wayside. ▸ 40

JOB SATISFACTION GETS MIXED GRADES

ALTHOUGH LAYOFFS AND BANKRUPTCIES have dominated the news this year, it seems that IT workers are still optimistic about their job security and salaries, according to *Computerworld*'s 2001 Annual Job Satisfaction Survey. But as companies look to cut costs, many are eliminating layers of middle management, which means that IT workers have fewer opportunities for advancement.

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Users See Greater Benefits In Tight Supply Chain Links

Sharing data early in the manufacturing process increases efficiency for companies

BY MARC L. SONOINI

THE BLOWUP between Ford Motor Co. and Bridgestone/Firestone Inc. over tire recalls may be the most visible example of the type of crisis that could be averted by companies sharing product data.

But for most companies, achieving efficiencies — rather than avoiding tragedy — is what's driving the increasingly popular move to collaborative supply chain systems. Boston-based AMR Research Inc. has predicted that license revenue for product life cycle management tools, which let companies share information with various departments and suppliers while designing products, will grow by 48% this year to $759 million.

Before companies head down this path, they need reliable and secure Web connections and collaborative applications. They also need trust between the parties involved, extensive business process revamping, and training for both employees and partners. They may also find that some of the technology doesn't yet do everything they want it to and could face challenges in getting partners to jump on the bandwagon.

Haworth Inc. is one company looking to benefit from this technology. The Holland Mich.-based maker of office furniture is setting up an automated collaborative system with its suppliers to manage engineering data more efficiently and share information globally among its various engineering departments, said Kathryn Farynowski, vice president of global order fulfillment. This system will help Haworth design its products faster, better and for less money.

The company currently uses a mix of third-party and home-grown systems to store and manage engineering drawings, and it would like to do more than add a Web interface to that system.

"We're expanding beyond Michigan and we need to manage products and projects globally, and our internally developed system was not developed with that in mind," said Farynowski.

Haworth is considering implementing product data and life cycle management tools from vendors such as Structural Dynamics Research Corp. in Milford, Ohio, and Parametric Technology Corp. in Needham, Mass. It hasn't yet found the right technology to link it to suppliers so early in the process that they can share data from the design phase on, however.

FARYNOWSKI: Haworth needs new system to manage projects globally.

Compaq Computer Corp. has been grappling with how to standardize some manufacturing processes across the server companies it has acquired, Digital Equipment Corp. and Tandem Computers Inc., each of which had its own procedures and systems.

Compaq recently announced the rollout of product life cycle management software from SAP AG. The system will pull together 10,000 employees from different branches to share data during the design process and to purchase parts for use across the company's manufacturing divisions, said Don Borgal, director of information management supply chain systems at Compaq.

Although it's still in the first phases of the project, Compaq plans to go live with a variety of supply chain management applications through the year. Simultaneously, the company plans to initiate changes in its engineering processes to help it exploit product life cycle management techniques more fully, Borgal said.

Companies must also sell their suppliers on using such collaborative technology. Automaker BMW already has a supplier portal system in place and can share product test and specification data with many of its suppliers. But getting everybody to use it is a challenge.

Additionally, last December, the company, an SAP R/3 shop, announced a three-year initiative to take its existing legacy systems and either Web-enable them or replace them with e-business applications. BMW also plans to store extensive vehicle data that can be accessed by employees and partners via the Web for continuous product improvement.

Despite this, there are still gaps in the system.

"At the moment, we still often communicate with our suppliers via e-mail, fax, phone or face-to-face," said a spokeswoman for Munich, Germany-based BMW.

WebMD Hit With Lawsuit After Failed Deal

Theft of trade secrets hard to prove

BY JULEKHA DASH

A wireless start-up company alleges that Elmwood Park, N.J.-based health care vendor WebMD Corp. stole trade secrets to develop its own wireless technologies, including handheld devices used by physicians.

Brandon, Fla.-based LynkUS Communications Inc. recently filed a lawsuit in the Circuit Court for Hillsborough County in Florida. The firm claims that WebMD misappropriated its trade secrets after reneging on a long-term deal between the two companies.

In court documents, LynkUS stated that it signed a nondisclosure agreement last November with Elmwood Park-based Medical Manager Corp. (which has since been purchased by WebMD), sharing information about its wireless technology.

After WebMD bought Medical Manager, LynkUS began developing a wireless application for WebMD's customer base that, according to WebMD's projections, would earn gross profits of $575 million through 2007 for LynkUS, the suit alleges.

"We spent a year on this project. This was not a casual relationship; this was a partnership," said LynkUS CEO Dwayne Pass.

He added that his company has yet to determine how much it will seek in damages. Pass said the failed deal with WebMD caused significant financial strain, forcing LynkUS to downsize its staff.

WebMD officials dismissed the lawsuit, saying that it's without merit. According to a WebMD spokeswoman, LynkUS made several business proposals, but WebMD declined to enter a business relationship with LynkUS because it felt the company couldn't add valoe. LynkUS then filed the lawsuit, she said.

> This is perilous, because the [defendant] can say the information to be protected was too vaguely defined.
>
> PETER BURKE, ATTORNEY, KRITZER & LEVICK PC

Proving that its relationship with WebMD was more than just a business deal that went sour could be tough for LynkUS, said Peter Burke, a technology and intellectual property attorney at Kritzer & Levick PC in Atlanta. The plaintiff has to show that there was a valid legal agreement to protect information, he said.

"This is perilous, because the [defendant] can say the information to be protected was too vaguely defined," Burke said. In addition, defendants often claim in such lawsuits that they were already developing the technology on their own.

The loss of a business deal with an established vendor could be devastating for a smaller wireless firm, because most hospitals and clinics will look to their existing vendors for wireless applications, said Mike Davis, research director at Gartner Inc. in Stamford, Conn.

WORKSTYLES

Summertime Heats Up IT at Ice Cream Maker Ben & Jerry's

Interviewee: Roger Legendre, director of information services
Company: Ben & Jerry's Homemade Holdings Inc. (*www.benjerry.com*), a subsidiary of New York-based Unilever United States Inc.
Main location: South Burlington, Vt.
Tenure: May 1999
Number of IT employees: 32
Number of employees (end users): Approximately 750

What It's Like To Work at...

How has working at Ben & Jerry's changed since the company was acquired by Unilever last year? "We have some interaction with them and are trying to partner up on some things . . . but the culture hasn't changed that I can see."

Major IT initiatives: "We're currently on a Digital VMS system, and we want to move to a Unix platform. We're also trying to align our chart of accounts with Unilever – in some areas, they have better buying power than we do – and to align our systems and connect our network and e-mail with theirs.

"But we have very different business applications. We have a large portfolio of custom applications, and they have a different portfolio of many purchased applications. We're looking to move to purchased systems, like an [enterprise resource planning] system."

What was the rationale behind the build-vs.-buy decision? "That was made before my time, but mainly it's because of the uniqueness of our plants: they were built with environmental concerns in mind. . . . Also, because our product is all-natural, we have to be very careful about the expiration dates of our raw materials. Our planning and forecasting systems are built to accommodate all of those things."

IT training: "That's an area of strength here. We started some programs in 1999, and we try to get people out to two or three classes a year. We're an Oracle development shop, so we have training in Oracle, NT and Windows 2000, and networking. We'll be doing a lot of Unix training this year."

Workday: "It's an eight-hour day, typically in the range of 8 [a.m.] to 5 [p.m.]. But, we're very flexible on family life, so if someone has a special need, we bend for that. There's some overtime, depending on projects. People will do whatever is needed to help Ben & Jerry's, whether it's for the business or one of our social missions."

Dress code: "You come to work as you wish. Some come in business casual, and some are very casual."

Must people carry beepers? Cell phones? "Some do. I have a beeper. But we try to make it not so invasive for people, so you might get an on-call beeper once every 12 weeks."

Unique office features: "We have an aisle called Wavy Gravy that waves its way throughout the building. And our conference rooms are named after ice cream flavors – Chunky Monkey, Cherry Garcia, etc."

On-site day care? No.

Free refreshments: "Ice cream. That's the downside. We get three free pints a day."

Little perks: Free membership at a local gym, an annual Halloween celebration, gift certificates to local restaurants, Ben & Jerry's Bucks to use in the company store, "and people can bring their dogs to the office."

Would employees feel comfortable e-mailing the CEO, Yves Couette? "They have."

– Leslie Jaye Goff (lgoff@x.netcom.com)

PAUL A. STRASSMANN

GE's B2B Retreat

NO COMPANY HAS MADE as vocal a commitment to radically transforming business by shifting to B2B e-commerce as General Electric has. What motivated GE was a fear that new competition would cut into its extraordinary profits. That's what outgoing CEO Jack Welch tried to hammer into his managers in January 1999, ordering them "to destroy their businesses and rebuild them for the Internet . . . before start-up dot-coms get the chance to destroy you." From that moment, the shift to e-business became a policy imperative, with every GE business unit jumping to integrate its suppliers and customers with its internal processes. After Welch's order, GE became the model for how B2B systems would be promoted. Consultants, gurus, vendors and trade magazines used the GE announcements to legitimize a rush into B2B, arguing that survival, not payoff, would be sufficient to justify new IT spending.

Periodic nutbursts of forecasts about the benefits of computing can be called epidemics of macromyopia, or looking only at what's out on the horizon and not at where you put your feet. You can tell whether an organization was infected with it after it has backed off from widely promoted computer initiatives.

GE appears to be suffering from a case of severe macromyopia. On May 4, *The Wall Street Journal* announced in a headline, "GE Reshuffles Its Dot-Com Strategy to Focus on Internal Digitizing." So far, GE has realized only 5% of its revenue through the Internet, far short of its goal of 30%. Its suppliers wouldn't readily convert their formats and methods to fit GE's systems. I also suspect that suppliers finally realized that if their systems were latched into GE's supply systems, their bargaining power with GE would diminish. Apparently, GE's visionaries didn't fully consider that implementing B2B is as much a political phenomenon as it is a technological one.

So now, a year after ordering its operating managers to realign their IT to look outward to customers and suppliers, GE management is calling for a quick retreat. The new marching orders: Concentrate IT investments on inward affairs, such as getting administrative processes to function more effectively. So it's déjà vu all over again, with a goal of extracting $1.6 billion in savings this year. GE has taken a smart, realistic approach in backing off from a mission that couldn't be executed and that could have been avoided if anyone had taken the trouble to study the enormous obstacles to implementing the highly desirable EDI concepts. But the most likely reason for the reversal can be traced to the company's hard-nosed approach to delivering steadily increasing earnings, even as the economy deteriorates.

So if GE needs more profits soon, where can it find them? When you follow the money, there's only one indicator that reveals where there may be a major opportunity: reduction of overhead costs. Here, the GE record isn't good. Its overhead costs as a percentage of the cost of goods sold increased steadily from 18.1% in 1991 to 21.5% in 1999. That shows that GE hasn't been pursuing a sufficiently concerted program to improve the productivity of its information management. If GE could restore its overhead cost ratios to 1991 levels, it would pick up $1.2 billion in savings. So it's apparent that this is exactly what it has decided to do now.

PAUL A. STRASSMANN (pas@strassmann.com) suggests that CIOs include in their résumés how often they had the courage to kill projects early.

Someday, GE's B2B dreams will come true, though nobody can tell when, since noneconomic forces such as national politics will continue to interfere with efforts toward global supply-chain integration. GE's sudden turnaround from an external focus to an internal focus should serve as a lesson on why CIOs shouldn't confuse their operating managers by promoting promising technologies prematurely. Careers will get hurt, precious time will be lost, and money that could have delivered added profits will never be recovered.

SUSAN FARRINGTON

DESPERATE FOR DIRECTION

Although most IT professionals like their vocation, many say their bosses do a lousy job at communicating and helping them move forward in their careers. By Sacha Cohen

IT'S BEEN A CHALLENGING YEAR. The dot-com kingdom collapsed under its own weight, and the economy took a turn for the worse. Layoffs and closings were the order of the day at many companies.

But even amid all the turmoil, IT professionals have remained overwhelmingly positive about job security, access to new technologies and their salaries, according to the results of *Computerworld*'s 2001 Annual Job Satisfaction Survey.

First, the good news. The majority of this year's 779 respondents said they're generally satisfied with their jobs. For example, a senior consultant at an IT consulting firm in Baltimore said that he's better off now than he was a year ago and that he's working up to his full potential. The only thing he would change about his curreot situatioo is to increase company-paid training.

And the best news of all is that despite the economy's ups and downs, approximately 60% of respondents are very satisfied with their choice of a career in IT. The professioo is still rewarding — from a growth and financial perspective — and few said they would switch careers.

But although the overall results are heartening, there are still some key areas that need improvement. Especially criticized were a lack of opportunities for employees to advance and insufficient communication with management.

A mere 30% of respondeots said they're satisfied with opportunities for advancement at their companies. According to one disgruntled network support employee, "I'm oot allowed to expand my horizons. If it wasn't for the pensioo, I'd be out of here."

Overall, the picture is anything but black and white. Those who rate themselves as generally satisfied in their jobs still have complaints, but others who are unhappy still give certain areas — such as salary and flexible work hours — a thumbs-up.

In addition to job security and the opportunity to use new technologies, workers' relationships with IT peers got high marks, while the frequency of bonuses and the connection between pay and performance didn't fare as well.

Don't Hold Me Back!

With the dramatic cutbacks and layoffs of the past year, companies are streamlining resources and reducing layers of middle management. For many in IT, this translates into fewer opportunities to advance. Approximately half of the IT professionals surveyed said that their opportunities to advance are less than satisfactory.

A help desk operator at one IT user organization says she wants management to realize her potential and to not restrict her to working within her job description. She also says that a lack of support from management — financial and otherwise — is taking its toll.

"[People in upper management] refuse to implement new ideas because the staff fear change," the help desk operator says. "Our budget is low, and we feel unappreciated. This feeling affects our performance and our loyalty to the organization."

But that isn't the case for everyone. Michael Heer, a senior consultant at Intelligent Technologies Inc. in Greensboro, N.C., says he's satisfied with the opportunities to advance at his company.

Like most of the respondents, David Walters, a database administrator at Science Applications International Corp. in Edgewood, Md., is basically satisfied with his job. He says he's especially content with his salary and the variety and scope of the projects he works on. But Walters says he does see room for improvemeot.

A 20-year industry veteran, Walters calls himself a realist and says he has learned that flexibility and rea-

THE 2001 SURVEY

Despite tales of a sluggish economy and a seller's job market, IT professionals apparently aren't feeling it in the pocketbook just yet, according to the results of *Computerworld*'s 2001 Annual Job Satisfaction Survey. In fact, IT professionals reported that their satisfaction with their salaries has increased from a year ago. The bad news: They cite growing dissatisfaction with their opportunities to advance at their current employers, as well as poor communication from supervisors on what career options are available. This isn't welcome news for IT managers, who are still wrestling with employee retention. Below are the results of this year's survey, broken out by where respondents work.

■ Satisfaction with salary

Nontechnology (user) company	15%	29%	14%	33%	10%
Consultants	17%	23%	16%	34%	10%
Contractors	13%	19%	9%	38%	22%
High-tech (vendor) company	11%	22%	11%	32%	24%

■ Frequency and amount of bonuses

Nontechnology (user) company	37%	22%	19%	14%	8%
Consultants	28%	23%	28%	14%	7%
Contractors	38%	13%	24%	22%	3%
High-tech (vendor) company	27%	23%	19%	20%	11%

■ Connection between pay and performance

Nontechnology (user) company	32%	24%	20%	18%	6%
Consultants	19%	21%	24%	22%	14%
Contractors	28%	22%	15%	22%	13%
High-tech (vendor) company	25%	19%	23%	22%	9%

■ Opportunities to discuss career goals

Nontechnology (user) company	24%	28%	17%	20%	11%
Consultants	21%	19%	15%	22%	23%
Contractors	22%	9%	19%	28%	22%
High-tech (vendor) company	24%	22%	17%	18%	19%

■ Opportunities for advancement

Nontechnology (user) company	35%	23%	20%	14%	8%
Consultants	29%	19%	19%	28%	15%
Contractors	22%	25%	10%	25%	18%
High-tech (vendor) company	30%	23%	18%	18%	11%

■ Opportunities to use new technologies

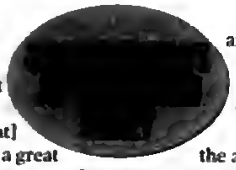
Nontechnology (user) company	15%	20%	14%	33%	18%
Consultants	17%	29%	10%	34%	10%
Contractors	13%	19%	9%	38%	22%
High-tech (vendor) company	11%	22%	11%	32%	24%

■ Opportunities for interesting projects

Nontechnology (user) company	17%	20%	19%	30%	14%
Consultants	15%	21%	19%	31%	14%
Contractors	19%	16%	16%	31%	18%
High-tech (vendor) company	15%	16%	19%	31%	19%

*N.A. = Not answered

sonable job expectations are key to his success.



"If I see something that needs to be done, I'm encouraged [by management] to do it," he says. "This is a great thing. I need new challenges, and if the place where I work allows that, I'm happy."

Walters says that managers who want to retain good employees need to offer more training and bonuses attached to the successful completion of projects. And he's not alone. Training and performance-related bonuses are two areas in need of improvement, the survey found.

The connection between pay and performance is a thorn in the sides of many of the IT professionals surveyed. About half of respondents are less than satisfied with how much they earn in salary and bonuses vs. how much they think they deserve. And more than half of the respondents said they don't think that bonuses are generous or frequent enough.

A managing director at a financial services firm — who was recruited and guaranteed a substantial first-year bonus — says he feels he's been misled. "Bonuses were nowhere near what they were promised," he says.

From a business standpoint, the company is doing well and is considered an industry leader, but from a budget and operational standpoint, that hasn't filtered over to the IT department, says the director. "The budget process is absurd," he says. As of early May, the IT department still didn't have a 2001 budget, he says.

This director was recruited in an attempt to improve the IT department and introduce new technologies and make it more responsive and business-focused — none of which has happened, he says.

"What I found was that the actual appetite to take on new technology is far less than what I had expected," he says. "The tendency is to maintain legacy systems." He's looking for other job opportunities.

> If I see something that needs to be done, I'm encouraged to do it.
>
> **DAVID WALTERS, DATABASE ADMINISTRATOR, SCIENCE APPLICATIONS INTERNATIONAL CORP.**

Everyone's Business

When it comes to understanding the business mission, IT folks are in the know. Approximately two-thirds said they have a strong grasp on the business goals and strategies of their companies. But far fewer — a little more than one-third — reported that they feel empowered to influence day-to-day company success.

Apparently, there's a disconnect between knowing what needs to be done and having the opportunity to do something about it. The message to management is that communication needs to improve and that business goals and IT strategy need to be better aligned.

Not surprisingly, flexible work hours and the physical work environment rated high among the concerns of survey respondents. More than 60% said they appreciate flexible hours but would love the option to telecommute more frequently. In general, IT professionals have few complaints when it comes to their work environments.

Not everyone, however, is comfortable with the round-the-clock expectations that go along with some IT positions. A database administrator at a major retailer is having a difficult time trying to balance her family's needs with her job.

"You need to be flexible at all times — whether you are dealing with problems remotely or otherwise," she says. "When you have children, it can be tough. There have been times when I've had to bring my kids along with me on a Sunday morning when something has come up."

Additional training and resources would help, she says, as would the option to telecommute.

At the end of the day, IT professionals work hard and expect to be rewarded appropriately. Whether that means performance-linked bonuses or career development opportunities, one thing is clear: If they don't find it where they work now, they'll go looking for greener pastures elsewhere. ◗

Cohen is a freelance writer in Washington.

THE 2001 SURVEY

■ Satisfaction with workload

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	13%	28%	28%	30%	[illegible]
Consultants	9%	16%	28%	32%	[illegible]
Contractors	9%	34%	18%	29%	[illegible]
High-tech (vendor) company	12%	26%	22%	28%	[illegible]

■ Company-sponsored training and seminars

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	26%	18%	19%	30%	[illegible]
Consultants	29%	17%	14%	29%	[illegible]
Contractors	25%	13%	27%	19%	[illegible]
High-tech (vendor) company	26%	23%	18%	18%	[illegible]

■ Satisfaction with job security

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	9%	13%	19%	[illegible]	[illegible]
Consultants	16%	12%	32%	19%	[illegible]
Contractors	22%	22%	6%	31%	[illegible]
High-tech (vendor) company	13%	15%	23%	23%	[illegible]

■ Ability to influence decisions that affect you

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	17%	24%	19%	31%	[illegible]
Consultants	19%	26%	10%	30%	[illegible]
Contractors	22%	9%	19%	34%	[illegible]
High-tech (vendor) company	14%	29%	12%	31%	[illegible]

■ Ability to influence decisions that affect your department

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	18%	27%	12%	29%	[illegible]
Consultants	18%	26%	25%	22%	[illegible]
Contractors	19%	16%	21%	29%	[illegible]
High-tech (vendor) company	20%	23%	19%	20%	[illegible]

■ Ability to influence day-to-day company success

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	15%	26%	28%	29%	[illegible]
Consultants	18%	18%	29%	30%	[illegible]
Contractors	20%	9%	19%	34%	[illegible]
High-tech (vendor) company	21%	20%	26%	22%	[illegible]

■ Relationship with your manager

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	10%	14%	[illegible]	[illegible]	[illegible]
Consultants	2%	14%	[illegible]	[illegible]	[illegible]
Contractors	6%	19%	[illegible]	[illegible]	[illegible]
High-tech (vendor) company	9%	19%	[illegible]	[illegible]	[illegible]

■ Communication with your manager

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	15%	22%	[illegible]	[illegible]	[illegible]
Consultants	11%	17%	[illegible]	[illegible]	[illegible]
Contractors	13%	19%	6%	[illegible]	[illegible]
High-tech (vendor) company	12%	27%	[illegible]	[illegible]	[illegible]

*N.A. = Not answered

Recognition received from your manager

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	17%	22%	14%	28%	19%
Consultants	15%	17%	18%	31%	17%
Contractors	6%	22%	9%	47%	16%
High-tech (vendor) company	13%	22%	18%	27%	20%

Your supervisor's managing abilities

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	19%	23%	14%	26%	18%
Consultants	14%	15%	25%	28%	18%
Contractors	22%	18%	6%	44%	10%
High-tech (vendor) company	19%	26%	13%	23%	19%

Relationship with peers in IT

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	2%	5%	13%	49%	31%
Consultants	1%	3%	23%	46%	27%
Contractors	9%	6%	6%	53%	26%
High-tech (vendor) company	3%	6%	13%	39%	39%

Relationship with users

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	2%	5%	15%	49%	29%
Consultants	1%	5%	22%	46%	26%
Contractors	0%	5%	22%	53%	20%
High-tech (vendor) company	3%	11%	20%	34%	32%

Your understanding of the business mission

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	5%	9%	15%	49%	22%
Consultants	7%	5%	15%	46%	27%
Contractors	19%	5%	6%	53%	17%
High-tech (vendor) company	7%	15%	15%	34%	29%

Your understanding of issues impacting the company

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	3%	9%	20%	49%	19%
Consultants	4%	10%	15%	46%	25%
Contractors	13%	9%	6%	53%	19%
High-tech (vendor) company	4%	9%	15%	34%	38%

Flexible work hours

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	9%	11%	15%	40%	25%
Consultants	1%	11%	15%	46%	26%
Contractors	3%	16%	13%	47%	21%
High-tech (vendor) company	9%	9%	15%	34%	33%

Ability to telecommute

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	30%	17%	16%	14%	23%
Consultants	19%	19%	23%	16%	23%
Contractors	22%	22%	24%	13%	19%
High-tech (vendor) company	24%	13%	16%	17%	30%

*N.A. = Not answered

Physical work environment

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	7%	19%	18%	34%	22%
Consultants	6%	21%	18%	37%	17%
Contractors	19%	22%	15%	28%	16%
High-tech (vendor) company	11%	14%	13%	30%	32%

Overall satisfaction with your job

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	NEITHER DISSATISFIED NOR SATISFIED (OR N.A.*)	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	12%	32%	13%	30%	13%
Consultants	14%	21%	13%	36%	17%
Contractors	13%	19%	6%	44%	19%
High-tech (vendor) company	18%	28%	13%	28%	14%

How stressful is your job?

	NOT VERY STRESSFUL	SOMEWHAT STRESSFUL	SOMEWHAT STRESSFUL	VERY STRESSFUL
Nontechnology (user) company	3%	17%	52%	28%
Consultants	5%	18%	52%	14%
Contractors	13%	18%	52%	16%
High-tech (vendor) company	1%	18%	51%	29%

Compare your stress level with what it was a year ago

	INCREASED	THE SAME	INCREASED
Nontechnology (user) company	19%	39%	39%
Consultants	14%	46%	40%
Contractors	28%	31%	41%
High-tech (vendor) company	19%	29%	52%

How satisfied are you with your career in IT?

	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	SOMEWHAT SATISFIED	VERY SATISFIED
Nontechnology (user) company	1%	7%	33%	59%
Consultants	1%	13%	33%	53%
Contractors	6%	9%	31%	53%
High-tech (vendor) company	2%	10%	39%	49%

Are you working to your full potential?

	NO	YES
Nontechnology (user) company	76%	24%
Consultants	78%	22%
Contractors	72%	28%
High-tech (vendor) company	72%	28%

*N.A. = Not answered

METHODOLOGY

Computerworld conducted its 2001 Annual Job Satisfaction Survey during the months of April, May and June. We asked IT professionals to visit our Web site and tell us about their satisfaction levels on a variety of job and compensation issues. Approximately 780 IT professionals took part in this year's survey, from a wide range of industries and company sizes.

All participants have been kept anonymous, unless they indicated a willingness to speak to a reporter for our anecdotal coverage of this year's survey.

The age, gender and company type of respondents to the survey can be broken out as follows:

GENDER: 76% men; 24% women

AGE BRACKET (WHEN INDICATED): 2% age 18-24; 26% age 25-34; 41% age 35-44; 31% age 45-54; 6% age 55-64; 1% age 65 and over

NATURE OF EMPLOYER: 62% nontechnology (user) companies; 12% consultancies; 4% contracting firms; 22% computer hardware or software (vendor) companies

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www.computerworld.com/jobsurvey


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sas

HARRAH'S BETS ON NEW STAFF STRUCTURE

Casino company adopts consultancy model in reorganizing its staff for better efficiency.

By Julekha Dash

TO PREVENT IT EMPLOYEES from walking out the door, you have to challenge them, according to a survey of 500 high-tech companies issued this year by the American Electronics Association, a Washington-based trade group.

This may come as no surprise to the average manager. But knowing this and taking steps to engage employees are two separate matters. Invariably, employees will like some assignments more than others, and not everyone can work on the hottest e-commerce technology projects. How do managers keep their staff challenged while making sure that projects have the right resources and are completed on time?

Casino and hotel operator Harrah's Entertainment Inc. has hedged its bets on a new IT structure that will enable the company to increase the pace of IT development while giving employees the chance to work on a variety of projects and learn new skills.

Last summer, the Las Vegas-based company reorganized its 260-person IT team similar to a consultancy. Under the new structure, resource managers determine project staffing needs and assign employees based not only on their skills, but also on their interests.

Harrah's, whose IT department is based in Memphis, wanted to cut costs and improve productivity without burning out staff. The new structure prevents staffers from becoming stuck in any particular area and lets them continuously learn new technologies.

To win over employees, Harrah's communicated the reorganization "in small chunks," rather than "shocking everybody in a big meeting," says Eileen Cassini, vice president of IT services. First, Harrah's held small meetings with employees, then it publicized the structure in memos and internal newsletters. That was followed by a kickoff project meeting, during which employees learned how their roles and responsibilities would change.

SUMMARY

Theme: Staffing

Topic: Profile of Harrah's Entertainment Co.

Key points: Restructuring IT staff on a consultancy staffing model

IT managers typically staffed their projects with people they had worked with and who had the most experience. As a result, employees were left with little mobility to expand their skills to new areas or work with new people.

Under Harrah's new structure, managers determine the resources they need, and resource managers assign the appropriate staff, says Cassini.

The resource managers ensure that any given project includes both senior people and junior staff who may want training in a new area. They look at the organization as a whole to determine what resources are needed, she says.

Having a resource manager also ensures that employees don't sit idly between projects or get swamped with requests. At the same time, employees get the challenging projects they want, Cassini says. And because project managers must determine what skills are needed at the outset of a project rather than pulling in contractors on an ad hoc basis, "it forces them to make sure on the front end that they have their ducks in a row," says developer Stephanie Brannon.

The new structure consists of a "floating pool" of 150 developers and three resource managers. This model also affords employees more flexibility in scheduling, says Brannon. So if a manager needs a full-time developer for an e-commerce project but Brannon can devote only 25 to 30 hours a week, a resource manager can choose someone else — perhaps someone who would like more e-commerce experience — to fill in the gaps by working 10 to 15 hours a week.

Cassini acknowledges that working with several managers rather than one is a difficult change. "When you're weak, it's difficult to do this because you're changing everything about your environment," she says.

A company should also have low turnover before attempting such a radical reorganization of people's jobs. Fortunately for Harrah, turnover has historically been very low. Last year, turnover in IT was 4%, and the average length of employment is nearly nine years for an IT staffer.

For Harrah's plan to work, employees had to trust that if they stop working with a manager they love, they will benefit somehow in the long run, says Cassini. "I don't know if you can do this if you don't already have a very good environment," she says.

MORE THIS ISSUE
Casinos are masters of customer relationship management. **See page 16.**

1999

October: Reorganization is proposed as part of the budget planning review.

2000

January: Plan receives final approval from senior management.

February: New plan is introduced to small groups of employees in meetings.

March/April: Managers let employees know their initial assignments.

June: Resource managers are hired and processes are put in place.

August/September: Evaluation process begins to be put together.

2001

January: New software tool to track competencies and projects is introduced.

April: "Still going through growing pains but fully operational," says Cassini.

Africa 1.0

Rebecca Enonchong, daughter of a village chief in Cameroon and educated in the U.S., co-founded the Washington-based Africa Technology Forum (www.africatechforum.com) to promote technology in Africa and to foster the networking and growth of African technology professionals.

Enonchong, 33, who is also president of Application Technologies Inc., a Bethesda, Md.-based global application service provider, recently spoke with Computerworld *reporter* **Kathleen Melymuka** *about the many challenges and opportunities of doing business in Africa.*

Why should U.S. companies want to do business in Africa? Look at what's happening in the U.S. economy: The market is shrinking. Africa has new, untapped markets. A lot of formerly government-owned enterprises are being privatized. Economies in Africa are growing at a rate much more rapid than in the West. They have a greater [technology] gap and greater need [for high technology] than in the West. There are great opportunities for any company offering goods and services.

WHO IS SHE?

Rebecca Enonchong, co-founder of the Africa Technology Forum, says tremendous opportunities exist for Western businesses that can handle a challenging IT environment.

Is there a digital divide within Africa? There is. Countries in southern Africa like South Africa, Botswana [and] Zimbabwe are more advanced. Then you have the northern African countries that are also more advanced. In the middle — what would be considered black Africa — you've got this huge gap, and that's the area of greatest opportunity, because it's neglected in general by American companies.

MOREONLINE
To read more from this interview go to www.computerworld.com/africaqa

What kind of infrastructure challenges are there? What about electricity? It's not everywhere. Even larger cities with millions of people may have entire neighborhoods without electricity. When you have it, it's really expensive, and, frequently, electricity will just go off for a couple days. So you always have to think about what kind of power generator you have and do you really want to use it for computers or do you need it for [other things].

Those are the kinds of challenges Africans face daily. It becomes part of your psyche, so it's a challenge but not an obstacle that can't be overcome. When we think about doing projects in Africa, we have to think about that and how we're going to deal with it and then just deal with it.

Talk about some of the challenges of deploying technology in Africa. Lack of land lines is very tough to deal with. Getting a phone line in some countries takes over a year, so dial-up [service] isn't necessarily an option. Most [companies] use VSAT technology, and in some countries, that's illegal, and in others, they could make it illegal any day, so even if you have VSAT, you don't want anyone to know.

Some companies will put [a satellite dish] on the back side of the building so the government officials won't see it. And that's very scary. Some companies have built their business around this technology and they don't know if it's going to last till next year. How do you get investors in a company that the government could shut down tomorrow?

What are some of the political challenges? On paper, some countries seem to be encouraging the growth of technology. For instance, Nigeria has a whole ministry for science and technology that's brand new. But our [chief operating officer] is from Nigeria, and he laughs and says it looks good on paper but the reality is that it's still filtering through and it will take some time. But it's a move in the right direction.

Then there are other countries I won't name. In one, the main land-line phone company was being privatized, and a South African company wanted to purchase the formerly government-owned [telecommunications firm], but the holdup was that one of the government ministers wanted $100 million for himself. That stopped the deal for a long time. Finally, it went through, but those are the types of things that happen.

About six years ago, when the Internet was becoming big, the minister of communications of one country said that over his dead body would his country have the Internet. He's still alive and he's still a minister in that country and the Internet exists. It comes from the population and you can't stop a revolution.

GROW FORMU

Capital One's sophisticated use of **customer information** has helped it become one of the most profitable credit card companies in the world. By Jackie Cohen

BIGGER IS BETTER. That's certainly been true for Capital One Financial Corp., whose revenue and return on equity have soared at a rate of more than 20% annually for the past six years, a feat achieved by fewer than 1% of all publicly traded companies.

The secret to the success of the Falls Church, Va.-based credit card issuer is a test-and-learn philosophy that the company has dubbed its Information Based Strategy (IBS).

Calling IBS "customer relationship management" (CRM) is an understatement, as the strategy goes above and beyond what most CRM packages do. IBS is a 6-year-old process that pervades all of the technology and business activities at Capital One.

IBS is a three-step approach: Step 1 is to create an idea for a new product offering, find a target population and a business case and then change the environment for members of this group to see how they react. Step 2 involves gathering data on the test and analyzing the results. Step 3 is aimed at using the test results to do microsegmentation, or to identify which people are most receptive to specific product types and conduct additional marketing campaigns based on those results.

"We identify people who will be positively attracted to the product, so the response rates are high, the cost of acquisition isn't outrageous, and at the same time, people are at an appropriate price to charge off [write off losses from accounts that default]," says Wylie Schwieder, vice president of customer relations at Capital One.

Capital One then analyzes the results of the test to determine what the appropriate prices or interest rates should be, says Schwieder. Company leaders look for relevant characteristics among the test group "and see whether we can go elsewhere in the U.S. to find more people who share those characteristics. Then we do a direct-mail campaign based on that," he adds.

For example, Capital One has used IBS to track visitors' activities and offer customized promotions on its Web site. It has studied which online visitors it has successfully converted into customers and has used that information to buy banner ads on other Web sites whose visitor demographics match those of its ideal customers.

Using these tactics, the company has doubled its goal of opening 1 million new accounts online.

Other results that are tied in part to IBS have been stunning. Capital One's revenue has exploded from $95 million in 1995 to $4.97 billion last year. During the same period, earnings mushroomed from 63 cents per share to $2.24 per share. Last year, they grew a staggering 51% to $1.59 billion. Meanwhile, Capital One's customer base has burgeoned from 6 million in 1995 to 33 million today. Capital One currently nets about 25,000 new customers each day.

"It's no secret that Cap One consistently performs well, but Cap One's business model isn't for everyone. They have a dumbbell-shaped business model; they do subprime and superprime [people with below-average to poor credit histories], so they are masters of product design, direct-mail marketing and risk-based pricing," says Theodore Iacobuzio, an analyst at TowerGroup in Needham, Mass.

Capital One's business model is different from those of its competitors, says Iacobuzio. American Express Co. tends to cater to the high end of the market, Citibank targets the middle market, and MBNA Corp. aims for affinity groups. "It's hard to compare CRM efforts at companies with such different business models," ootes Iacobuzio. "You can't have a dozen 800-pouod gorillas all doing the same thing."

For its part, Capital One conducted 45,000 tests last year, averaging 120 per day. The company has racked up 100,000 different segments, or product combinations. People in every part of the company are perpetually testing and segmenting — matching credit card offers to potential customers who might be interested, matching customers to sales representatives wbo can best help them, matching sales reps to the appropriate product campaigns, and so on.

For instance, IBS significantly enhances risk-based pricing for Capital One — the process of setting different interest rates and fees based on a person's creditworthiness. Most banks make these decisions using credit scores, or algorithms, that are calculated based on a person's income and credit history.

The Match

Through testing and learning about how cardholders perform, Capital One is able to use more informatioo about prospective customers to determine what to offer them and to allow it to come up with a much wider variety of prices and terms.

Case in point: When the Federal Reserve Board repeatedly raised its interbank interest rates last year, Capital One was able to keep its lowest-priced card at 9.9%, while most of its competitors were forced to boost their interest rates to 12.9% or more to remain profitable, Schwieder says.

Similar tactics are used in the firm's call centers. For example, when a call comes in, the customer is identified and his record is run through a database to determine what he might possibly want to discuss. The call is then routed to the representative who's the most qualified to address the customer's concerns.

This match is based on 12 different customer characteristics — including the products he already has, account status and responsiveness to previous campaigns — and five different employee characteristics, such as training, skills and availability. When an incoming call reaches the appropriate representative, his PC displays the caller's account and personal information, with scripts suggesting good products to cross-sell. For instance, a customer who regularly pays off all of his balances might be routed to a representative who will be able to target-market a platinum card with a bigger credit line.

The routing software, one of the few shrink-wrapped applications that Capital One nses, is Cisco Systems Inc.'s Global Service Logistics (GSL) system. "Everyone will say they use GSL the same way we do, but I think we use it more intelligently than they do," says Schwieder. "We use many more attributes in judging where the call goes. And we gather more data about that call than anyone else does. I say this with a high degree of confidence. And we use that data as a basis for creating decision rules that get embedded in our applications."

Call center supervisors use proprietary workforce-management software to create schedules for the 3,000 phone representatives to meet call volume. "We also consider our associates' needs when creating those schedules, to ensure that our reps remain highly satisfied with their jobs," says Marge Connelly, Capital One's executive vice president of opera-

tions and IT infrastructure. "By doing this well, we are able to deliver strong performance in terms of costs, service levels and associate satisfaction."

Apparently, Capital One *is* doing this well: Five magazines (including *Computerworld* and *Fortune*) have ranked the financial company as one of the best places to work.

IBS also drives Capital One's recruitment strategy, having streamlined the hiring of 3,000 new associates last year. Managers use proprietary software to identify the best-performing, most loyal employees, using biannual evaluations; study what traits make them successful; and recruit people with the same characteristics that the successful employees had when they first joined the company.

But these characteristics are based upon more than just keywords that appear on people's résumés. At all levels, prospective hires are subjected to a battery of tests, including a timed math exam, a behavioral interview and simulations of the jobs for which they're applying. The scores are compared automatically with the profiles of ideal employees. Candidates who apply for a job listed in the paper might get slotted for a different position within the company based on their scores. This means human resources doesn't need to run as many classified ads as it otherwise might, which has resulted in a 45% reduction in human resources costs since IBS was instituted.

The amount of technology required to support IBS is immense. Ever since the card issuer was spun off from Richmond, Va.-based Signet Banking Corp. in 1994, Capital One has has spent hundreds of millions of dollars building and refining systems based on IBS. (Worldwide, companies spent about $19.9 billion on CRM last year, according to Gartner Inc. in Stamford, Conn.) More than 1,000 IT associates cootinue to enhance and maintain IBS-driven systems, which encompasses every piece of technology used by the company's 19,000 employees.

"Our IT organizatioo is the central nervous system of Capital One," says Connelly. ◗

Cohen is o freelonce writer in San Francisco. Contoct her at jackieee@pacbell.net.

Web Guru Seeks Mentor

Most Web geeks aren't asocial generation Next code maniacs. They're young techs with a creative streak who need training, role models and managers who can keep up with them. By Mathew Schwartz

POPULAR MEDIA STORIES about Web geek chic, the edginess of the Gen X or Gen Y workforce and the preponderance of ping-pong and Foosball tables in New Economy workplaces have faded, along with the New Economy itself. But the Web geeks themselves are still around, and they're becoming even more important to mainstream IT organizations that are still adapting to both the Web and the changes in management style it requires.

All stereotypes aside, however, should younger IT workers — especially those with the mix of design and technical skills that characterizes true Web geeks — really be supervised differently from other IT workers?

Culturally speaking, the two groups can differ, both in what they want and in what they need.

"To generalize, if it's a Web geek, they're looking for a home with lots of buffer, allowing them to be a creative person with parental supervision if needed," says Hamilton Gilbert, director of production at HighWired Inc., a classroom technology integration company in Watertown, Mass. Gilbert has more than 15 years of experience in the IT trenches as a programmer, quality assurance tester and manager. He says that mainstream IT people, by contrast, "like process and procedures, in general."

The roles and responsibilities of managers remain largely the same in both cases. But supervising a Web team means keeping up in an environment in which the creative and technical demands change much more quickly than in a traditional IT shop.

"The manager must be able to pick up a manual, learn on the fly technology [that] they have not seen before and perform for the tech team" by providing both training and guidance, Gilbert says.

That agility must come in addition to the usual combination of leadership, mentoring and team-building skills. Knowing a few things about geeks helps as well. Since most managers already *are* geeks, that usually isn't a problem. "Once a geek, always a geek," says Gilbert.

For any manager who came up through the ranks, "you'll assume they know some of this [Web-oriented] technology," says Matthew Grant, whose title is minister of enlightenment at Aquent Inc., a Web staffing firm in Boston.

But yesterday's knowledge doesn't carry much weight in Web time. "If they're a project manager who came up through the ranks and knew Flash, and Flash 4 then 5 comes out, how do they keep up?" asks Grant.

Geek stereotypes, such as the one about young workers who will code their brains out if given a cotton candy machine and no interference from management, make for interesting stories. But they don't do managers or

Manager Training Resources

Managers don't just need good management skills; they also need to keep their technical skills up to date. Training resources like the following can help them keep up with their young turks:

COMPANY	SPECIALTY	WEB SITE
JonesKnowledge.com Inc.	Broadcast studio training	www.jonesknowledge.com
Moltor Consulting	Change/motivation management	www.moltor.com
Provant Inc.	Organizational performance	www.provant.com
Webmonkey	Free tutorials on Web design, software and programming	www.webmonkey.com
Experts Exchange Inc.	Free site where developers can trade information	www.experts-exchange.com

young workers any favors.

The lone-wolf stereotype doesn't just dog managers. It also hinders young Web developers, who often seek guidance from managers even though they feel that they should be able to develop their own skills, with little assistance from the outside.

"They don't know they are looking for a mentor," says Gilbert. "They want someone who will guide their success. A manager puts challenges in froot of the junior members and helps them swim."

Son Trinh says a lack of such guidance left him adrift in earlier jobs. That's why be specifically searched for a technology-savvy mentor when he launched his most recent job search. He landed a spot as an applicatioo developer at Boston-based Bullhorn Inc., whicb builds Web-based software to help automate project management in the advertising industry.

At his previous job at a small start-op, Trinh was the lead technology person, reporting to a nontechnical chief financial officer. Because there were no senior-level technology managers to turn to with questions, small problems could take a frustrating amount of time to solve, he says.

"I like my current situation better, because I don't have as much responsibility outside the realm of what I know," Trinh says of his current job, his third since graduating in May 1999 from Cornell University in Ithaca, N.Y.

He reports to the chief technology officer, who's a developer witb many years of experience and who counts mentoring as part of his job.

Companies with managers who can't mentor their IT workers will eventually lose those workers, says Robin Railey, a principal at training company Performance Dynamics Inc. in Atlanta.

But technical standouts may not excel at managing and are unlikely to be "natural" mentors, a breed that Railey says is incredibly rare.

"I spent 20 years in corporate, and I can tell you one manager, maybe one and a half, that I can count as a mentor" and who took her career interests to heart, says Railey

Those soft skills are the ones that Web geeks who get promoted to management often lack, she says.

"A lot of companies don't traio you," says Jim Jones, director of the Atlanta-based Informatioo Management Forum, which is composed primarily of executives and senior managers at Fortune 1,000 companies and large government organizations.

In fact, programmers are taught that problems such as bad code should be isolated and then eliminated, a strategy sure to backfire when managing people, says Jones. "If you've got an employee who iso't performing, it isn't a technical problem," he says. It requires a dialog with open-ended questions, such as "How do you and I bring your performance up to an acceptable level?" Jones says.

He recommends developing internal training programs for managers. Such a process gets top brass and managers talking in order to create a shared set of expectations, he says.

"The way companies transmit culture is through the managers. It doesn't matter how many boards you put up around the company that say, 'These are the principles,' " he says.

And what happens when the Web geeks themselves become the next generation of senior managers?

"I think you have to get a little concerned about 20 years from now," says Jones. "What is going to be the level of talent in managing organizations, given that no organizatioo spends the money today that it used to? When you look around the world today and see the senior-level managers that were spawned out of IBM, Xerox, HP and GE . . . how many organizations are doing that now?"

AMANDA BARRY

Web Geek Seeks Boss With Real Understanding

Son Trinh is a Web application developer at Bullhorn, a professional services automation vendor in Boston.

What qualities do you value most in a manager?
I like someone who really shows they care about the people they're in charge of, and someone who's really willing to answer all of your questions and just make themselves available for you, even though they're extremely busy. So an open, low-key, very approachable, friendly person. Because if your manager is stressed, then you're always stressed.

You reported to the chief financial officer at your last job. Was it good or bad to report to a nontechnical manager?
Both, the good side being that I had a lot available for me to play with, [so] I was forced to learn certain things. But the main bad side was I had no one to help me learn, and that was frustrating, because I wasn't necessarily proficient in what I was trying to do. So small things which should have taken hours to resolve took more, because I had to do a lot of research. I would have learned a lot more about what was going on if I had had a boss I could turn to that was technically sound.

How is your current job different?
I like my current situation better, because I don't have as much responsibility outside the realm of what I know. It's nice to be a little uncomfortable in your job because you need to learn, but this is better than before, when I was way beyond my knowledge base.

How do you like reporting to the chief technology officer?
I find it to be an asset. I love being able to turn to him with questions, especially regarding the way he built the site. It's complicated, and it's nice to have him as a resource.

Would you say you have a mentoring-style setup with your boss?
Yup. That's what I was looking for. It was one of the things I looked for when I started looking for new jobs.

Do you get on-the-job training now?
Right now, I don't do any formal training outside of working and project work. It's really learn as you go.

– *Mathew Schwartz*

Preaching Slack

Consultant Tom DeMarco argues that efficiency isn't all it's cracked up to be.

By Kathleen Melymuka

"The more efficient you get, the harder it is to change," writes **Tom DeMarco** *in the introduction to his new book,* Slack: Getting Past Burnout, Busywork and the Myth of Total Efficiency *(Broadway Books, 2001).*

DeMarco, 60, a noted expert on programming and IT projects, and the author of several books, including Why Does Software Cost So Much? *(Dorset House, 1995), is a principal at The Atlantic Systems Guild Inc., a loose affiliation of management consultants based in New York and London. He recently spoke with* Computerworld *about the relationship between efficiency and effectiveness.*

You call this book "a diatribe against efficiency." What's wrong with efficiency? Starting [about] 1990, we were stunned by the Japanese phenomenon: They were more efficient, made better products, worked harder. We feared we would get eaten alive unless we made ourselves much more efficient. So we looked around for people who were relatively less busy and laid [them] off. Then we had a population relatively more busy, and we gave those people more work and made them busier still.

But during this time, the Japanese economy fell out of bed, and it hasn't been able to pick itself up. When you become more efficient, you might be too busy, too focused on the present, too tense, too frightened. You see all those people laid off, and that could happen to you if you're not busy enough or if you tried something new in which you are not an expert. So when you're more efficient, you're less agile and less able to change. You're going faster, but you can't steer anymore. In the short term, there's lots of progress in one direction. But in the long term, it's just another wreck.

What should we do? We need to be a little less efficient in order to be more agile.

And that's where slack comes in. What is slack, and how does it differ from fat? How does a breeze differ from a draft? If your whole outlook of management is cost reduction, then anytime somebody is not sweating and racing looks like fat to you. But it looks like slack to me when a person has time to think about reinventing the organization, about personal growth, about new and better approaches to the marketplace. Those are the most vital things that happen in a company. Companies need to buy some time for their people when they're not 100% busy and they're free to think.

You also talk about "control slack." What's that, and why is it important in an IT organization? Control slack is a degree of freedom in the "hows" of doing work — choices about approach and tools. These things are also tightly tied to personal growth. The best people don't want to be told exactly what to do and when. They want some choices.

You write about "overimproved" organizations. What does that mean? That's one in which you have cut out all the slack and standardized the way of doing everything, removed all the thoughtful consideration that goes into doing work and replaced it with a fixed pattern of how work ought to proceed as envisioned by a guru class. It might be fine today, but you need to understand that change is not something that happens in a change center. It has to happen throughout the organization.

Explain why extended overtime is a productivity reduction technique. When you work people beyond the workweek, you run into three horrible phenomena. One is burnout, when they just feel used up. The second is mental fatigue, when they start to make a lot more mistakes. Third is that they start to take the time back. They offset overtime with undertime to take care of the needs of their personal life. Finally, they also quit because they feel used. In exit interviews, one of things people mention with astounding frequency is that they were feeling used. As a manager, using people up is not a formula for keeping them around.

How does slack affect retention? Slack means the time and freedom to go about a job in a way that satisfies you and allows you some personal growth. I'm not talking about half the day — it is a reasonable amount of choice in the day and not being driven by the clock all the time. Time for personal growth leads directly to job satisfaction. ▶

MOREONLINE

For more of this interview with Tom DeMarco, visit our Web site. www.computerworld.com/demarco

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The Learning Curve

BY GARY H. ANTHES

IF YOU DON'T read past this first paragraph, remember just two things: You almost never move up a learning curve, only down. And the steeper the curve, the easier the learning.

Learning curves were first used by the aircraft industry in the 1930s. The Boeing Co. pioneered the discipline when it discovered that the cost to build new airplanes was highly predictable.

For example, it might cost $100 million to build the first copy of a new airplane, $80 million to build the second, $64 million to make the fourth, $51 million for the eighth and so on, with the unit cost falling 20% at every doubling of volume before reaching a plateau, say $15 million. The planes get cheaper to build as the company learns how to do it more efficiently. Workers work faster, make fewer mistakes and waste less material.

Plotting these production costs against units of production along a graph yields a learning curve that slopes from the upper left to the lower right (see diagram). The steeper it is, the faster the person, project team or company is learning to produce that item or service.

When Down Is Up

Moving up the curve would represent negative learning, or forgetting, and wouldn't normally occur except perhaps in a company with an accelerating rate of employee turnover.

People often get the learning curve nomenclature backwards. For example, securities firm U.S. Bancorp Piper Jaffray Inc. in Minneapolis has a booklet on the Web titled, "Helping Investors Climb the E-Learning Curve." But it should be about *descending* the learning curve, not climbing it.

DEFINITION

A learning curve shows the relationship between the cost of producing an item or performing a task and the number of units produced or tasks performed over time. Its slope reflects how quickly a person or an organization improves with experience.

Even Boeing has gotten it wrong. In 1998, the Seattle-based firm delivered the aft fuselage of its third F-22 Raptor fighter three weeks ahead of schedule. But in the press release touting the achievement, the F-22 program manager quipped, "We're climbing the learning curve at a good rate."

Mankind has known that performance improves with practice since cave men made the second wheel. But what's surprising is how accurately performance can be predicted given early production data.

This can be crucial for a company like Boeing. It knows it can't price its new airplane at $100 million or even $50 million. But can it make a profit by pricing them at $25 million each? When will the company reach a break-even level of production, how much will it have lost up to that point, and how much profit will it make on planes built after that? Learning curves can help answer those kinds of questions.

Today, Boeing uses learning curves for capacity analysis, resource requirements planning, cost-reduction proposals and estimations of production-line performance, says Dwight Miller, director of industrial engineering for Boeing's commercial airplanes group. "We benefit daily from this concept."

Indeed, the equations underlying learning curves can be an essential part of cost estimating, pricing and staff planning. "The potential applications of learning curves far outstrip their current usage," says Charles Bailey, an accounting professor at the University of Central Florida in Orlando.

Tools of the Trade

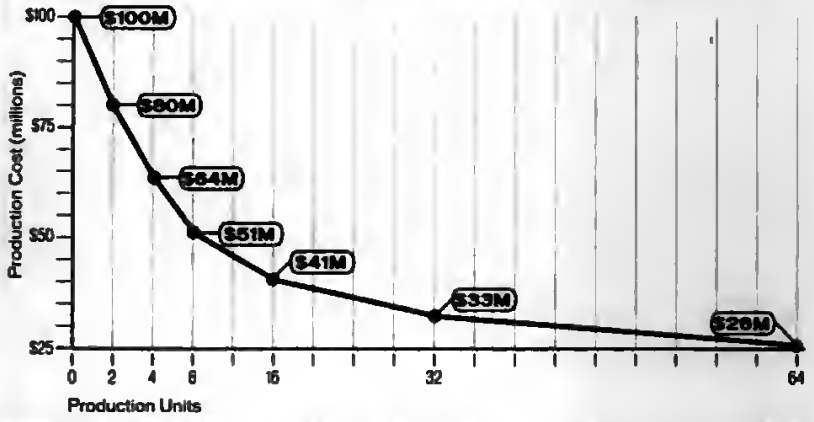
Bailey offers freeware for performing learning curve calculations at *www.bus.ucf.edu/bailey*. NASA also has a tool (*www.jsc.nasa.gov/bu2/learn.html*) that allows anyone to perform simple learning curve calculations online. More powerful software is available in commercial packages such as Curv1 from Production Technology in Tampa, Fla.

"There is a new recognition that learning curves can create incentives for aggressive pricing in the early phases of a product life cycle," says Michael Riordan, a professor of economics and business at Columbia University in New York.

For example, a semiconductor manufacturer might use a learning curve to price a new chip far below its initial manufacturing cost to discourage competition from an imitator. That low price then stimulates demand, which "moves the company quickly down its learning curve," Riordan says.

Practice Makes Perfect

If it costs a company $100 million to make its first airplane, and if learning enables it to work 20% more efficiently at every doubling of volume, production costs will follow this learning curve:



Curve Calculations

Charles Bailey, a learning curve expert at the University of Central Florida, says learning curve calculations can answer questions such as these:

- A new bank clerk needed an hour to encode his first 500 checks, 50 minutes for the second 500 and 45 for the third 500. When will he be able to work at the standard rate of 1,000 checks per hour?
- An electrical contracting firm wired two identical homes in two hours each. The same team took 90 minutes to wire a third home. How long will it take it to wire the 10th?
- A fast-food trainee takes an hour to prepare his first 20 sandwiches, 45 minutes for the second 20 and 36 minutes for the third 20. What will his production rate be after 24 hours of experience?
- A custom boat builder has built a prototype of a new sailboat. From past experience, he knows the learning curve rate for similar boats. What are the labor requirements for the second and third boats?

– *Gary H. Anthes*

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

TECHNOLOGY

WAVE OF WIRELESS

Computerworld's reviews editor stalks the aisles of PC Expo and finds notebook PCs with built-in wireless networking and tablet PCs that really work, plus power from the air. ▸ 44

SECURITY JOURNAL

As its dot-com clients disappear, the company that security manager Mathias Thurman works at decides to cut costs — and his department gets the ax. Thurman and his staffers are off to look for new jobs. ▸ 45

FUTURE WATCH

A second spring is blooming for treemaps, a visual interface that lets users view thousands of files at once as proportionately sized rectangles grouped to represent folders. ▸ 46

CACHE AS CACHE CAN

The Internet should handle static images and audio and video files quickly, but it needs Web caching technology to make that happen. Now, firms are planning caching and content-delivery systems that can also handle dynamic content. ▸ 52

MORE

Emerging Companies 54
Skills Scope 55

INCOMPLETE DIAGNOSTICS

KEEPING TABS ON A Web site's infrastructure — making sure the Web plumbing doesn't leak or get clogged — is an important job for which you need good tools. Infrastructure management tools are evolving into smart data-gatherers and analyzers that can pinpoint a Web site's stress points. But users say that the view these tools provide is far from complete and that they're forced to rely on a mix of products that deliver only a fragmented picture.

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BRIEFS

Yahoo Offers Video Instant Messaging

Following a similar announcement from Microsoft Corp. earlier this month, Sunnyvale, Calif.-based Yahoo Inc. is offering its members the ability to send and receive live video feeds to their "buddies" through the Yahoo Messenger instant-messaging service.

Four weeks ago, Microsoft announced it would provide live video feeds in its MSN Messenger software. The instant messaging software will also be embedded in the Windows XP desktop, which is scheduled to be released Oct. 25.

The new Yahoo video service works with Web cameras made by Switzerland-based Logitech International SA. It has been offered on a trial basis for the past four weeks on Yahoo's Web site.

Once the webcam is installed and the software is downloaded from Yahoo, members can send and receive video feeds by clicking on the name of members in their buddy lists who opt in to the video feed. The webcams range from $49.95 to $149.95. Users must run Windows 95, NT or 98 and have the Logitech Webcam to use the service.

States Deploy Adobe, Cardiff's LiquidOffice

North Dakota's state IT and tax departments and four California state agencies will be among the first organizations to use LiquidOffice eForm Management System software, released June 25 by San Jose-based Adobe Systems Inc. and Vista, Calif.-based Cardiff Software Inc. Based on XML, LiquidOffice uses standard Web browsers and Adobe's Portable Document Format to allow users to route, approve, submit and sign online forms created with Cardiff's forms software.

The workgroup edition of LiquidOffice supports 100 log-in accounts and costs $15,000; the enterprise version starts at $45,000; and the eGovernment version, which includes automation of Web-based eForms for public use, starts at $55,000.

RUSSELL KAY

Wireless Wave at Expo

WIRELESS communication is getting simpler, cheaper and better. It's being built into more and more devices. And at least in some places, wireless is becoming available enough that it's likely to change the ways we work and play.

That was the message from a special press-only event held last week in conjunction with PC Expo in New York that showcased new digital and mobile products and technologies.

One important signal of the coming dominance of wireless technology was given by the major PC vendors that were present. Compaq, NEC, Toshiba America, Hewlett-Packard, Fujitsu and IBM were all showing new versions of their laptops equipped with wireless networking, mainly 802.11b wireless Ethernet, also known as WiFi.

WinBook Computer Corp., a Hillard, Ohio-based subsidiary of Micro Electronics Inc., was showing its new X1, a 5-lb., ultrathin notebook equipped with a 1-GHz processor, a combination DVD/CD-RW drive, a 13.3-in. display and wireless networking.

If you believe the hype coming out of Microsoft Corp., the Next Big Thing will be the tablet PC for wireless Internet access. A year and a half ago, I reviewed the intriguing but overweight Qbe tablet computer from Aqcess Technologies Inc. in Irvine, Calif. [Technology, Nov. 11, 1999]. It was interesting but not really usable. The subsequent and smaller Vivo is more practical, but still not good or light enough to make me a believer.

Fujitsu PC Corp. has been qnietly making this sort of computer for several years, and frankly, it has a better handle on it than anyone else. The company's newest model, the PenCentra 200, is an interesting 2-lb. device running Windows CE H/PC 2000. (A Microsoft spokesman said that Windows CE development efforts are now going almost entirely into the Pocket PC platform, while the company is basically in maintenance mode for the "handheld PC.") The PenCentra has an 8-in., 640-by 480-pixel screen. No price was given.

The best of the Fujitsu tablets is the Stylistic 3500. With its 10.4-in., 1024-by-768 screen, 500-MHz low-voltage Intel Celeron CPU, 256MB of RAM, 15GB hard drive and several options (including a wall-mounted cradle), this is the most workable tablet PC I've seen.

Significantly, the display model was running a demo of a medical data-entry application, which even had a block designed to capture the signature of a doctor or nurse. The signature would be wirelessly transmitted to a central network. That's the type of application that I believe will make tablet PCs truly useful — the only type of serious application that could justify the cost of the 3500, which starts at $3,899 and is sold through systems integrators and value-added resellers.

RUSSELL KAY is Computerworld's reviews editor. Contact him at russell_kay@computerworld.com.

Wireless also means battery-powered. I once had my cell phone battery run down in the middle of a medical emergency. That was a distressing experience. New York-based Electric Fuel Corp. has an intriguing answer: Instant Power, a zinc cell that produces electricity upon exposure to air and can recharge the hatter of a cell phone or personal digital assistant in two bours.

The disposable unit comes with a resealable airtight pouch that allows it to be used up to three times before it's dead. A handy emergency item, it costs $20 for the cord and battery, with replacement batteries at $10 each. Another option is a $17 completely disposable cell phone battery using the same technology.

Logitech Inc. has introduced an interesting new wireless keyboard, the Navigator, which has numerous added controls for Internet access and audio control. This is hardly a new idea — I use a two-year-old Microsoft keyboard with an imposing line of specialized buttons arrayed across the top — but the Fremont, Calif.-based firm seems to have thought more carefully about the practicality of these buttons.

Logitech has grouped the buttons in several related areas and made them different sizes and shapes that enhance usability. Also, the keyboard is much flatter than most — there's less rise from one row of keys to the next — with the intent of reducing stress on users' wrists. With a wireless optical mouse, the package sells for a reasonable $99.95.

IBM, Intel Back IP-based Storage Standard

BY LUCAS MEARIAN

A group of technology vendors, including IBM and Intel Corp., last week came out in support of a proposed naming service standard for IP-based storage networks.

IBM and Intel said they're backing the Internet Storage Name Service (ISNS) specification as a device discovery and management tool for IP-based storage networks because they believe it will become the leading technology for that task within five years. The most recent draft version of the standard was released last month by the Internet Engineering Task Force.

The ISNS specification is designed to allow a server connected to a network to find storage devices, or "targets," with which it can communicate. That's supposed to save IT managers from having to manually configure the addresses required for routing data, a task that isn't feasible on large corporate networks.

Proponents have said the proposed specification would also let users set up their networks so that only certain servers could communicate with different storage devices. The vendors that are co-authoring the standard include Cisco Systems Inc., IBM and Brampton, Ontario-based Nortel Networks Corp.

Even Security Managers Get the Dot-com Blues

When Mathias' company decides to cut costs, the entire security department gets the pink slip

BY MATHIAS THURMAN

SECURITY MANAGER'S JOURNAL

YOU MIGHT THINK that with all the excitement at my company during the past month, job security wouldn't be an issue for this security manager. After all, I'm responsible for making sure hackers don't compromise our company and steal data and intellectual property belonging to our clients. But if you thought that, you'd be wrong.

At around 9:30 a.m. today, our CIO announced a 45% reduction in staff companywide. This is all related to the dot-com crash. Most employees knew that the company wasn't doing well and that a "workforce reduction" (the management euphemism for a layoff) was in the works.

The application that our company hosts is a convenience, rather than a necessity. As our dot-com clients look to trim costs, our service is usually first on the chopping block. That's beginning to affect our bottom line. After the general announcement, the CIO met with the managers individually to let them know whether the layoff would affect them.

When it was my turn, the CIO didn't waste any time letting me know that the executive staff wanted to shut down the security operation. In many companies, security is viewed as though it were some sort of insurance policy. My department didn't directly contribute to the bottom line. Unless you work at a managed security services provider or a security product company, security departments aren't typically revenue-generating functions. And if you think security is perceived as mission-critical, think again: Security personnel are among the first to go.

I was disappointed, but I wasn't upset. I have a vested interest in the company's success — I own stock — and if a staff reduction helps to keep the company above water until the economy shakes out, I'm all for it. I was initially hired to clean up the infrastructure, and I've been about 80% successful. But I didn't feel good about telling my staff.

After the meeting with my CIO, I broke the news to the two people who work for me. It's a hard thing to lay off such hard-working employees. Fortunately, they both took it well. Each one received a decent severance package and can stand to be out of work for a month or two.

As for me, well, the layoff didn't come as a total surprise. I knew that the company wasn't doing well. Rumors of a layoff were circulating, so I had been hitting the job boards just in case. I can't afford to take off for a month, even with a severance package. I recently received — and have decided to accept — an offer to work at a large company in northern California as a manager of security architecture.

A Security Nightmare

I'm glad I don't have to face the possible security headaches that these layoffs will cause. Not everyone took the news of the layoffs as well as my staffers did. Many of the people who were affected — database administrators, network analysts, help desk staffers — were in positions to compromise the IT infrastructure. And many of them were upset. Several people broke down crying; others were furious.

Not surprisingly, the company asked all laid-off employees (including me) to leave the premises immediately. But there were no security guards or other forms of enforcement to ensure that the employees actually left immediately. So instead of leaving, many employees hung around to say their goodbyes and collect personal belongings. I was no longer responsible for security at the company, but I knew that this was a security manager's nightmare.

Many administrators who were let go had been entrusted with the keys to the IT kingdom and had the power to cause great harm to the company. Any number of disgruntled employees could try to take revenge by vandalizing the information systems or stealing intellectual property.

Unfortunately, the employee departure policy I had drafted never made it to the final approval stages, so there was no approved checklist to ensure that all access had been removed for these employees. I offered to stay as a courtesy until management could ensure that the proper access was removed for all departing employees, but company officials declined, saying they didn't want to give laid-off employees the wrong message.

Adios, Dot-Coms

So now it's 11:30 a.m., and I'm sitting at home writing this week's installment. I'll take the rest of this week off before starting my new job on Monday.

With the economy in its current state, I wanted to ensure that I have a stable job. The company I'll soon be working for is in a well-established industry: insurance. It also has thousands of employees, many of whom are claims adjusters in the field.

My new employer has many information security initiatives under way. One of those involves implementing a virtual private network for the claims adjusters so that the company can cut costs by eliminating expensive long-distance dial-up connections. It'll be an interesting project and a lot more challenging than the projects at the job I just left, given the relative size of the organization.

The other aspect of the job that interests me is the company's use of mainframes. The firm only recently replaced terminals with PCs and faces new challenges as it looks to make mainframe data available over the Internet. I have a limited background in mainframes, and this position will give me exposure to mainframe portal technology and the traditional Resource Access Control Facility, which is used to administer and control access to the mainframes. I'll also have a team of analysts working with me who can help monitor and administer the security infrastructure.

In my new position, I must also get up to speed on health care privacy and security initiatives such as the Health Insurance Portability and Accountability Act (HIPAA) and some fairly new financial mandates, such as the Gramm-Leach-Bliley Act.

I've always preferred working at dot-com start-ups. But with the economy in its current state, a well-grounded firm is probably the best option for this security manager. The dot-com days are over. Now it's time to move on.

THIS WEEK'S GLOSSARY

HIPAA: In order to protect the security and confidentiality of patient information, Congress passed the Health Insurance Portability and Accountability Act. By February 2003, doctors, hospitals and insurance companies must be in compliance with HIPAA or risk civil or criminal penalties.

Gramm-Leach-Bliley Act: Like HIPAA, this law establishes privacy and security regulations, but it does so for financial services firms.

LINKS:

www.siliconvalley.com/docs/news/svfront/033067.htm: This story at SiliconValley.com illustrates the security risks that companies may face in the wake of layoffs.

www.computerworld.com/resources/hipaa/0,4031,NAV63-128-1358-2020,00.html: This Web page aggregates all of *Computerworld*'s stories on HIPAA into a single resource that includes details on the legislation and advice on how to comply with the new law

MOREONLINE For more on the Security Manager's Journal, including past journals, visit www.computerworld.com/securitymanager.

■ This week's journal is written by a real security manager. "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mthurman@hushmail.com or go to the Security Manager's Journal forum.

Treemaps Bloom

Visualization techniques let users make sense of thousands of files at once. By Sami Lais

A SECOND SPRING is blooming for a uniquely visual interface that lets users view thousands of files at once as proportionately sized rectangles, grouped to represent folders.

These "treemaps" will see increasing use in applications that can give users a fast yet comprehensive understanding of complex structures, developers say.

Treemap developers from across the U.S. and Europe met at the University of Maryland, College Park, in June to share research results.

New algorithms offer improvements. They maintain ordering, such as by size, alphabet or date created; reduce surprising movements of file images as sizes change; and prevent having a screen with hundreds of razor-thin slices and a handful of squares.

New "squarification" algorithms ensure that all files will be represented as squares. One application adds color and 3-D shading techniques.

An open-source Java treemap library, a work in progress, is downloadable for free.

"We were thrilled to see how people have started with our basic idea and taken it past where we dreamed it might go," says Ben Shneiderman, a University of Maryland professor who 11 years ago built the first treemap (*www.cs.umd.edu/hcil/treemaps/treemap2001*).

The first treemaps used a simple slice-and-dice algorithm that sometimes produced arbitrary and extreme shapes. The newer squarification algorithms assign space based on the weight of the attribute selected — such as size or most recent date of alteration — and arrange the resulting file images to give a more square look to each group.

Hip to Be Squarified

New York-based SmartMoney.com has incorporated a squarified treemap view in its MapStation application at *www.smartmoney.com/mapstation*. Stocks are represented by colored rectangles, and traders can make size and color represent any of several dozen financial indicators. For example, size can represent a stock's price at the moment, while color can indicate whether a stock's performance that day is hot.

In ordered treemap applications like SmartMoney's, users can select a "pivot point" based on a file attribute such as median size. All file images will be sized in relation to the pivot file's designated size. Views that use this kind of pivot point tend to offer smoother update views, an important consideration when the treemap must present the results of dynamic queries, such as in a photo-browsing application.

In developing his PhotoMesa photo browser, Ben Bederson, director of the Human Computer Interaction Laboratory at the University of Maryland, faced a visualization problem new to treemaps. A photo file size may vary, depending on resolution, but all photos must be represented at equal size, although their orientation may be landscape or portrait. He developed a new algorithm, which he calls a "quantum treemap," that extends the ordered treemap to present groupings of photos in continuous rows.

One researcher with a unique vision is Jack van Wijk, a professor at Eindhoven University of Technology in the Netherlands. The more complex the hierarchical structures, the more difficult the tree is to visualize, he says. "I asked myself, How can we emphasize structure?" van Wijk says.

His answer was to apply 3-D computer graphics techniques to treemaps to develop his "trees and cushions" treemap application, SequoiaView.

File images created by SequoiaView (*www.win.tue.nl/sequoiaview*), a free disk-browsing tool, can make large files or files that haven't been accessed in a year immediately evident. Shading creates a 3-D cushion effect, differentiating each rectangle representing a file from adjacent files. Color coding each file further differentiates one from another.

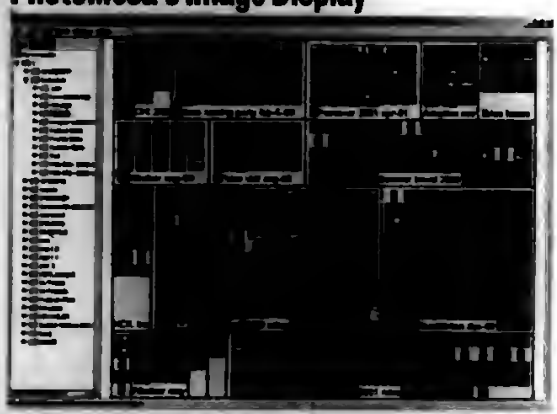
Christophe Bouthier, a graduate student at the Lorraine Laboratory for Research Into Information Technology and Its Applications (LORIA) in Nancy, France, maintains a free Java library at *http://sourceforge.net/projects/treemap* for implementing Shneiderman's Treemap 2000.

Treemap research is still growing. Van Wijk is developing a botanical treemap in which hard drives are represented as 3-D espaliered trees, directories and subdirectories as main branches and twigs, and files as leaves. Mohammad Ghoniem and Jean-Daniel Fekete at the Ecole des Mines de Nantes in France are working on animating the updating of a hierarchical view.

Treemaps are showing up in a variety of applications. At Stanford University, doctoral candidate Peter Demian is using the LORIA library to create treemaps for a building design knowledge visualization and reuse application. And at the Burlington Northern Santa Fe Railway in Fort Worth, Texas, treemap views help managers track equipment and personnel at a glance.

Look for more applications to start sprouting treemap views, Shneiderman says. For starters, he says, the University of Maryland has licensed 50,000 copies of its treemap application to Micro Logic Corp. in Midland Park, N.J., for use in the company's DiskMapper software.

PhotoMesa's Image Display



PhotoMesa, a photo-browsing application in development by the University of Maryland's Ben Bederson, uses a quantum treemap to show all images at the same size, regardless of file size.

3-D Shading With SequoiaView

A straightforward slice-and-dice treemap shows the contents of a PC's hard drive. The larger the file, the larger the rectangle and the easier it is to differentiate. By using SequoiaView to apply 3-D shading, thin rectangles are easier to differentiate. Adding color to identify types of files further enhances legibility.

Data Warehouse Gives Trimac Information for the Long Haul

Trimac travels new data-exchange routes with Hummingbird Genio. By Linda Rosencrance

IT WASN'T ALWAYS EASY for Trimac Corp.'s internal users to access critical data for their reporting needs without contacting the IT department.

Although Trimac kept data about its day-to-day operations, it didn't have a database that could consolidate all of the business information from various sources within the company and provide a multidimensional view of that data so employees could analyze business conditions.

The problem affected users' ability to perform key analyses such as trip standards analysis, which examines factors like profitability, based on equipment or a particular customer, by reviewing variables such as load time, loaded miles traveled and gross vehicle weight. Financial reporting in areas such as accounts payable and accounts receivable was also fragmented.

So Trimac, a Calgary, Alberta-based bulk hauling and trucking firm, turned to Toronto-based enterprise software company Hummingbird Ltd.'s universal data-exchange product, Genio Suite, to help improve access to corporate data from across the organization.

"This initiated with our Business Intelligence Project," says Len Mori, project manager for infrastructure at Trimac. "One of the tasks was to deliver reports [to different departments]. [To do that,] we had to build a data warehouse. We didn't have the tools to do that, so we started looking around for a solution that gave us a fast turnaround to implementation."

With the rise of the Internet and e-commerce, businesses accumulate large amounts of data in a relatively short amount of time. To be successful, they have to provide their departments, as well as their customers, with the most useful data — and they have to get it to them fast. That's where data warehousing and access tool suites come in.

"This technology facilitates the implementation of data marts used for trip analysis, haul analysis and profitability, either by customer or equipment," says Martin Zardecki, business intelligence manager at Trimac.

Mori says Trimac decided on the Genio Suite after looking at several other products.

"We had three products [demonstrated] for us," Mori explains. "Genio Suite was the most mature product we saw. Genio was a breeze to install and set up. The others were harder."

That's because Genio Suite was created to meet specific needs, says Sami Hero, senior director of product marketing at Hummingbird. It automates many tasks that normally require time-consuming programming, letting users rapidly develop data-transformation routines. "We made it more programmer-friendly," he says.

Genio Suite is a data extract, transform and load (ETL) tool that pulls data from its original database, converts the data into the right format for analysis and loads it into a central repository, or target database.

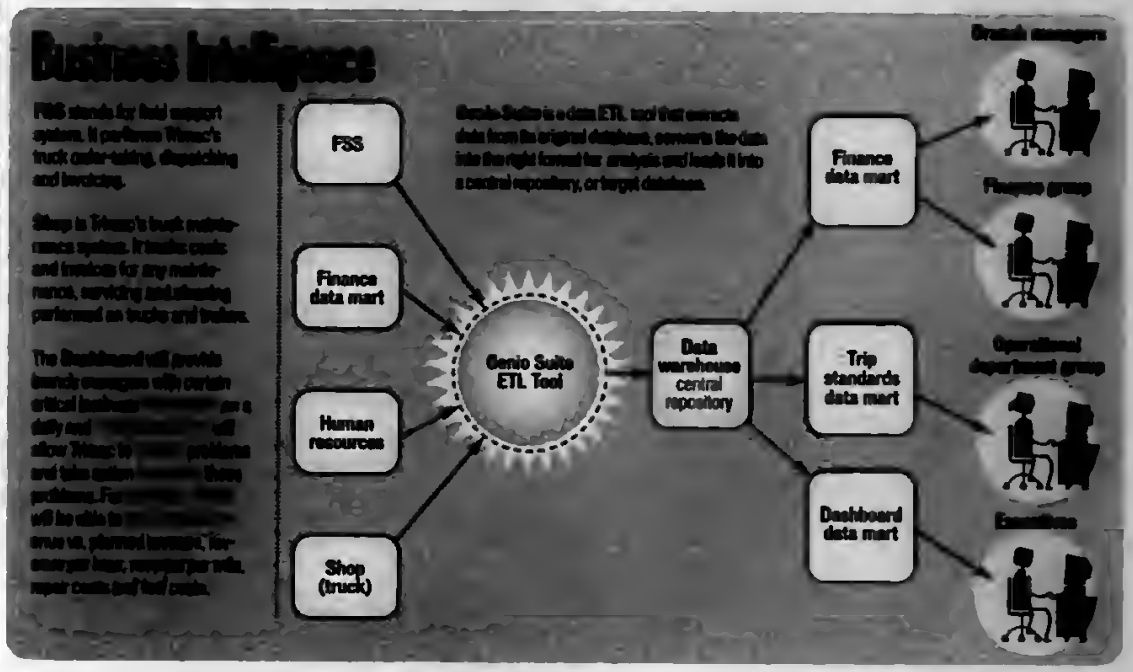
Trimac implemented Genio Suite on its Solaris platform to populate its data warehouse with clean, accurate data from various financial and human resources applications.

The tool lets Trimac's IT department cost-effectively and easily design, deploy and maintain data transformation and exchange processes, according to Mori. This dramatically simplified Trimac's internal systems and ensured the consistency of data, he says.

The company uses PeopleSoft financial and human resources applications running on an Oracle database. Business intelligence tools from Ottawa-based Cognos Inc. deliver querying, reporting and online analytical processing capabilities to users. Using Genio, Trimac is able to extract data from its various applications and populate the data warehouse.

Several data marts are created for use with the Cognos tools for multidimensional analysis of data such as account information, products, customers and schedules, as well as accounts payable and receivable information.

"Hummingbird's Genio Suite appeals to organizations seeking an ETL tool with more of a programminglike style, since this offers some potential advantages in control and customization of data-movement processes," says Ted Friedman, an analyst at Gartner Inc. in Stamford, Conn. "The ongoing challenge for Hummingbird is to define and communicate a clear vision and strategy for Genio amidst the wide range of products in the Hummingbird portfolio."



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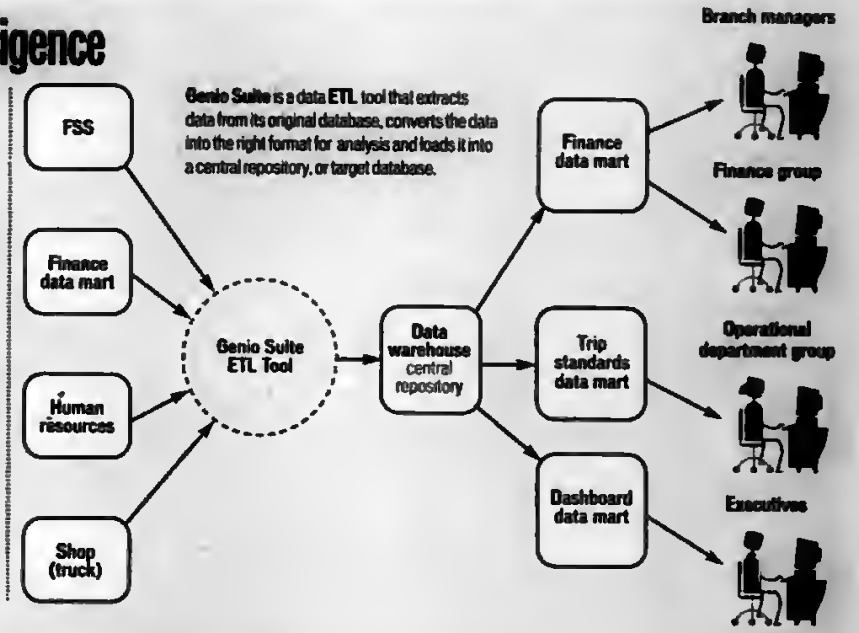
Business Intelligence

FSS stands for field support system. It performs Trimac's truck order-taking, dispatching and invoicing.

Shop is Trimac's truck maintenance system. It tracks costs and invoices for any maintenance, servicing and cleaning performed on trucks and trailers.

The **Dashboard** will provide branch managers with certain critical business information on a daily and weekly basis that will allow Trimac to identify problems and take action to correct these problems. For example, Trimac will be able to report actual revenue vs. planned revenue, revenue per hour, revenue per mile, repair costs and fuel costs.



WEB INFRASTRUCTURE: Imperfect Diagnosis

KEVIN BOOK, SENIOR DIRECTOR OF technology at The Motley Fool Inc., can easily recall the days before he had adequate tools to mooitor his company's popular financial Web site, which attracts more than 2 million visitors per mooth. "Our online store actually ran out of disk [space]," he says. "We were unable to write orders. You can imagine what the guys in ties were thinking when that happened."

Like many IT managers today, Book is charged with keeping a Web infrastructure up and humming. He relies on an assortment of products for snapshots that, taken together, form a more or less complete picture. Some, like the Tivoli Enterprise Console from Tivoli Systems Inc. in Austin, Texas, provide trouble alerts and event logs. Others, such as Patrol 2000 from BMC Software Inc. in Houston, monitor major elements such as servers, applications and databases. Additional tools, including SiteScope from Freshwater Software Inc. in Boulder, Colo., and the Web-based performance services from Keynote Systems Inc. in San Mateo, Calif., specifically test page downloads and other Web transactioos and compare them to industry benchmarks.

"We're running better, we're running faster, and we're running bigger with the same number of staff," Book says. Still, he adds, "it's difficult to get down to one product." Some tools, such as Tivoli and Patrol, share data, but "it would be nice to have a truly unified view," Book says.

Jeb Bolding, a senior analyst at Enterprise Management Associates Inc. (EMA) in Boulder, Colo., agrees with that assessment. "It's still difficult to get a complete, end-to-end view," he says. "They all say they've got one, and no one really does."

Book's multitiered, piecemeal approach is common. Mainstream systems — management frameworks such as Tivoli, HP OpenView from Hewlett Packard Co. and Uniceoter TNG from Computer Associates International Inc. in Islandia, N.Y. — often serve as both underpinning and umbrella, allowing network managers to keep an eye on all their hardware and applications, of which their Web systems are a subset.

Some IT managers also employ bandwidth-managemeot and traffic-shaping software from companies such as Resonate Inc. in Sunnyvale, Calif., as well as "intelligent" network hardware to avoid bottlenecks and redirect resources. For example, Alexandria, Va.-based Motley Fool has a Big-IP Controller load balancer from Seattle-based F5 Networks Inc. that can use input from SiteScope to balance loads among Web servers.

Web-tailored point solutions complement the broader management frameworks, often sharing data with them, says Bolding, who has interviewed companies about their Web infrastructure strategies. "I have yet to run into any enterprise that has a framework product that doesn't [also] have a point product that fills in the hole."

These Web-specific utilities have taken an increasingly application-centric view in recent years. Vendors of automated testing tools for software develop-

Infrastructure management tools are evolving into smart data gatherers and analyzers that can pinpoint a Web site's stress points. But users say the view they provide is far from complete. By David Essex

GORDON STUDER

ers, such as Mercury Interactive Corp. in Sunnyvale, Calif., and Segue Software Inc. in Lexington, Mass., have repositioned their products to take advantage of the e-business market buzz. Application monitoring reached a still finer level of granularity on April 30, when Nashua, N.H.-based Dirig Software Inc. announced Fenway, which it claims is the first component-level management software for application servers. Fenway can purportedly detect failures in Java- and Microsoft-based software objects and components.

Dirig is among a handful of vendors also claiming recently to provide the first comprehensive, application-centric views of e-business infrastructures. Altaworks Corp., also based in Nashua, makes that claim for its new Panorama, also announced April 30.

Taking the holistic systems approach to still another level is adaptive control, a technique similar to an airplane's autopilot that is already used in power plants and digital cameras, according to EMA. In October, it became available in Sunnyvale, Calif.-based Peakstone Corp.'s eAssurance product, which measures site activity in real time, compares it against a preset model of service quality and automatically makes necessary adjustments to Web caches, load balancers, servers and databases.

The overarching trend seems to be to build an increasingly detailed data portrait of each of the infrastructure's stress points, then analyze and present it so that IT can get better at provisioning sites. For example, many products perform root-cause analysis, which attempts to statistically correlate events with other conditions that occurred at the same time, providing better clues to the nature and location of

Software Tools

- **Fenway**
  Starts at $15,000 to $30,000
  Dirig Software Inc.
  Nashua, N.H.
  www.dirig.com
- **HP OpenView**
  Starts at $23,900 for Operations console, $230 per node
  Hewlett-Packard Co.
  www.hp.com
- **Patrol**
  Separate Predict and Perform versions for Oracle ($290 and $390 per server, respectively) and Unix ($395 and $875); Storage Resource Manager (starts at $40,000); Service Level Management (starts at $5,000 plus $195 per managed node; Windows versions start at $815)
- **Site Angel**
  Starts at $900 per year
  BMC Software Inc.
  Houston
  www.bmc.com
- **Peakstone eAssurance**
  $48,000 plus $4,800 annually per Web server CPU
  Peakstone Corp.
  Sunnyvale, Calif.
  www.peakstone.com
- **Silk Performer**
  Starts at $25,000
- **Silk Test**
  Starts at $6,500
  Segue Software Inc.
  Lexington, Mass.
  www.segue.com
- **SiteScope**
  $995 for 25 monitors
  Freshwater Software Inc.
  Boulder, Colo.
  www.freshwatersoftware.com
- **Tivoli Enterprise Console**
  Approximately $300 per node
  Tivoli Systems Inc.
  Austin, Texas
  www.tivoli.com
- **Unicenter TNG**
  Starts at $2,500
  Computer Associates International Inc.
  Islandia, N.Y.
  www.ca.com

"We're running better, we're running faster, and we're running bigger with the same number of staff.

KEVIN BOOK,
SENIOR DIRECTOR OF TECHNOLOGY,
THE MOTLEY FOOL

problems. But Bolding says the method's success depends heavily on product-specific knowledge bases that haven't yet been adequately developed or detailed.

Other IT managers say they're also using a mix of targeted tools and comprehensive system-management suites.

At Thomson & Thomson, a trademark and copyright services firm in North Quincy, Mass., the focus is definitely on application testing. A division of The Thomson Corp., a $2.6 billion publisher in Toronto, T&T in 1997 upgraded its main product, Trademarkscan, which lets users search 16 databases of U.S. patent and trademark filings. T&T put a Web-based graphical user interface (GUI) in front of its awkward Dialog command-line screens and began hosting the databases locally, reducing the number of front-end servers from five to two. The result was the Saegis service. "We've rearchitected the system several times to make it more efficient," says Brian Chase, quality assurance manager at T&T.

Chase and a small support team use Segue's Silk Test and Silk Performer to test new builds of Saegis and monitor its performance after deployment. Silk Test, which compares the values of each page's HTML code against known values, comes in handy for checking the GUI and the accuracy of data loads after a build. The alternative would be writing 500 to 600 short test scripts, Chase says.

Silk Performer logs into the live site every 10 minutes. It's programmed to aggregate the search and billing steps of a simulated "metauser," says Chase. "We use it to determine thread depth and the latency of the way the searches are progressing through the system," he explains. "If the transaction doesn't come back in a certain amount of time, we know we have a lag or a latency." The software spots memory leaks and bad threads and helps staff tweak applications for better performance.

MORE ONLINE

Read how Wayne State beefed up its Web site to better compete.
www.computerworld.com/webinfrastructure

At Acuson Corp., the need for new management tools was driven by last November's effort to upgrade the company's "brochureware" Web site so it could support e-commerce, says Rob Shearin, CIO and vice president of IT at the Mountain View, Calif.-based maker of medical ultrasound equipment. A merger with Siemens AG also required tying into the Germany-based electronics company's intranet, says Shearin. "Scalability is important to us," he says of the site, which runs on two Unix boxes hosted by an outside provider. The intranet, which runs internally on Windows NT hardware, started with 2,500 users at Acuson but now is linked to 26,000 others in the medical group and 440,000 Siemens employees worldwide.

Availability, however, wasn't Shearin's main concern during the process of selecting management products last year. Because Acuson's high-ticket products have such long sales cycles, it would be helpful to "separate the buyers from the browsers" to pass along information to salespeople. "I need something that can help me segment and monitor and prioritize and understand my capacity," he says.

Acuson uses Freshwater's SiteScope to view a basic topology of Web servers and traffic-analysis software from WebTrends Corp. in Portland, Ore., to analyze visitor habits. But Shearin's staff still needs standard network-management tools to keep an eye on the hardware layer. "We have the [Simple Network Management Protocol] hook into the environment to make sure the boxes are up and available," Shearin says. Acuson does use HP OpenView software, which provides alerts but doesn't provide the real-time performance snapshots that Shearin wants. For that, he uses Peakstone's eAssurance, which underwent proof-of-concept testing in mid-May.

Tools Lack Breadth, Timeliness

Shearin says initial tests of eAssurance showed that the Peakstone product provides not only customer activity reports but also early warnings about capacity problems. "From an investment standpoint, it's been able to tell us, 'have we overbought?' " he says. His staff also likes the product's centralized, comprehensive view. But it's too early to judge the software's ability to control Acuson's infrastructure, and Shearin says he has a wish list of improvements for Peakstone, but he won't identify them. "There are certainly a few bumps in the road," he says, especially in coordinating the new management responsibilities with the hosting provider.

Chase says T&T's Segue combination has proved effective. "We've had almost no downtime in the last year or two," he says. He recounts an incident when the T&T team noticed one server running slowly. "We realized we had messed up a package installation, but we were able to catch it pretty quickly" with Silk Performer, he says. Chase says he likes the repeatability of the automated tests and the fact that it relieves his staff of tedium. But like some other users, he faults the management tools for not keeping up with upgrades of the software they manage. "It takes a while sometimes for [Segue] to get their newest versions done," says Chase. "It got kind of tough to wait for. In the end, what they gave us was really good."

Though he also uses diagnostic tools that come with his Sun servers, Chase acknowledges that T&T's infrastructure management strategy is incomplete and says company network managers are investigating additional management software, perhaps Tivoli. They already use the AppWorx Enterprise Scheduler from Bellevue, Wash.-based AppWorx Corp. to monitor uptime of the Saegis servers, which run at hosting provider Digital Island Inc.'s center in nearby Medford, Mass.

Why not outsource all the management headaches? Many users are harshly critical of the management tools and support provided by managed service providers (MSP), calling them inadequate and bemoaning the managerial confusion from renegotiating service levels and responsibilities. "At the end of the day, they can't play in this space," says Shearin. "Managed services are not a good value for the dollar," agrees Book. "We have experienced no visible gains." Bolding says MSPs especially appeal to large companies with numerous divisions that can't support their own network management staff, but the users he has talked to paint a similarly unflattering picture. "Typically . . . they've been disappointed with it," he says.

Essex is a freelance writer in Antrim, N.H.

Satellites Link Bob Evans Farms

Restaurant chain taps Spacenet for speed, service and cost-effectiveness. By Sami Lais

THE NETWORK connecting Bob Evans Farms Inc.'s 459 restaurants and six food production plants runs over satellite, a technology choice that came as something of a surprise to company executives.

"Truthfully, we didn't want to do satellite at first," says Bob Evans Farms CIO Larry Beckwith. The company looked at frame relay, Integrated Services Digital Network, a virtual private network over the Internet and Digital Subscriber Line services. "Heck, we even looked at microwave," he says.

Rightly so, says Brownlee Thomas, a Giga Information Group Inc. analyst in Montreal. "Terrestrial will always be a better technology, where you can get it."

But satellite was the only technology that supported Bob Evans' goals, was available at all sites and was cost-effective, Beckwith says.

Until last year, Bob Evans restaurants dialed in daily to the Columbus, Ohio, headquarters to report sales, payroll and other data. That worked well enough, Beckwith says.

Credit card authorization, especially on busy weekend mornings, was another story.

"With dial-up, every time you swipe a credit card, a modem dials the credit card authorization site, makes the connection, then verifies the card, which takes another 15 seconds," Beckwith says. If the connection fails, it restarts after timing out for 30 seconds, "a long time when you've got a line of people waiting to pay. We needed a persistent IP connection."

Satellite would give the restaurants that connection and sufficient bandwidth — 8M bit/sec. outbound from remote sites and 153K bit/sec. inbound.

After talks with satellite network vendors, Beckwith ran tests for two months, first in the lab, then in one restaurant, on a Skystar Advantage system from Spacenet Inc., a subsidiary of Israel-based Gilat Satellite Networks Ltd.

Only after a further month-long pilot with 10 stores was Beckwith sold on satellite. During the next five weeks, Spacenet rolled out earth stations to 440 stores, and the network went live last September.

"Average time to do a credit card authorization is about three seconds now, including getting your printed receipt," Beckwith says.

Also running over satellite are nightly automatic polling of financial data from the point-of-sale (POS) systems, Lotus Notes e-mail to managers and online manuals on restaurant procedures, POS systems, facilities and physical plant maintenance, "things the restaurants never had live access to before," Beckwith says.

Benefits plus savings from dropping one phone line per store justify the costs, he says. And "we haven't given up anything. Sometimes we see a little 'rain fade,' and we might lose a store for . . . a minute, but nothing significant. We put software on the servers that would use the phone lines as backup, but we've only used them a couple of times," he says.

Also important for Bob Evans was the ability to easily add stores or applications. "We open about 30 new restaurants a year," Beckwith says.

New applications planned for this year include online inventory management, with XML-based electronic ordering to follow.

In-store audio for music and promotional messages and video broadcasting for employee training and corporate communications (Skystar supports IP multicasting) are also in the works.

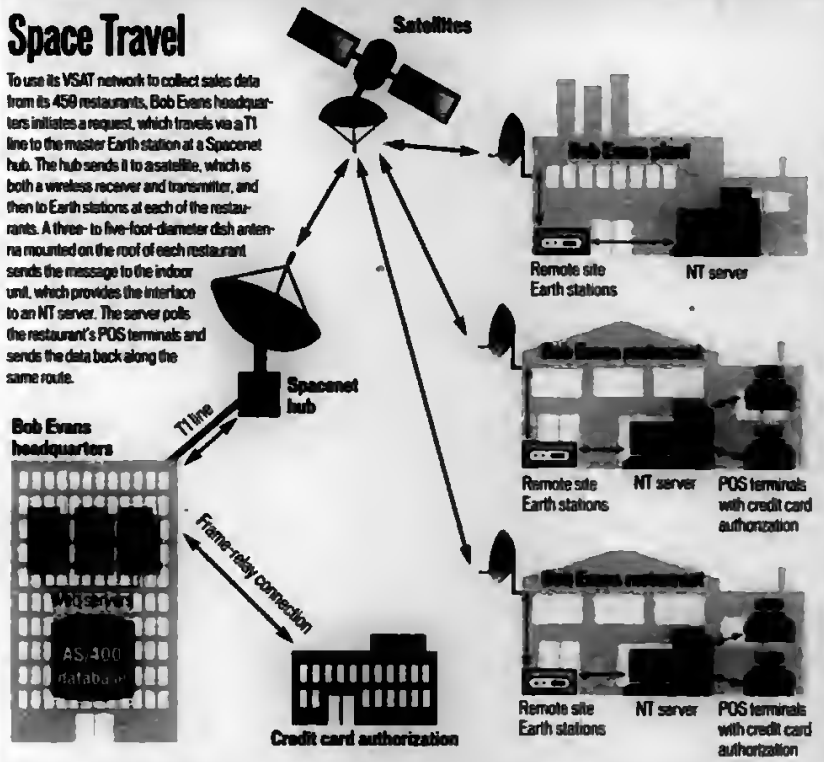
With fewer than 500 sites, Bob Evans' cost is just above what has been the break-even point for satellite service, says Thomas.

But Spacenet's speed enhancements, its offering of the technology as a managed service and amortization of what has been a substantial (about $1,000 per site) upfront cost for VSAT equipment could lower the cost, she says.

A Spacenet spokesman puts the break-even point at 250 to 300 remote sites and a three- to five-year contract.

Space Travel

To use its VSAT network to collect sales data from its 459 restaurants, Bob Evans headquarters initiates a request, which travels via a T1 line to the master Earth station at a Spacenet hub. The hub sends it to a satellite, which is both a wireless receiver and transmitter, and then to Earth stations at each of the restaurants. A three- to five-foot-diameter dish antenna mounted on the roof of each restaurant sends the message to the indoor unit, which provides the interface to an NT server. The server polls the restaurant's POS terminals and sends the data back along the same route.



How It Works

Spacenet tweaks conventional satellite technology to speed communications by cutting latency and pooling bandwidth. Remote sites communicate with their host site via TCP/IP.

TCP was developed as a "chatty" protocol to accommodate unreliable telephone lines. The user PC requests a file or a Web page. The host server acknowledges the request and then breaks the file into pieces, sending one piece and requesting confirmation of its receipt.

The user PC sends a confirmation, or a request for retransmission if transmission failed, and a request for twice as many packets.

This back-and-forth continues until the whole message is received and reassembled at the user's PC. It happens so fast over terrestrial connections that the user is unaware of it.

But each trip to or from a satellite adds an eighth of a second, or a half of a second of latency to each exchange. A Web page with 20 elements can add 5.5 seconds of latency.

Spacenet's TCP and IP accelerators let its hub intercede in the process, sending content to the remote site and confirmations to the host site. Total latency for the same 20-element Web page: 0.5 seconds.

Fourelle Systems Inc. in Santa Clara, Calif., uses a similar "spooling" scheme to cut latency.

But Spacenet also has a Frequency and Time Division Multiplexing Access (FTDMA) scheme to more efficiently use bandwidth.

Conventionally, remote sites are assigned to a particular frequency or channel. If it's busy, the remote site must wait, even if other channels are idle. But by using Spacenet's FTDMA scheme to allow dynamic addressing, any remote site can use any open channel.

– *Sami Lais*

WEB DATA: CACHED OR CURRENT?

Caching Web site content can speed performance but make managing dynamic updates exceedingly difficult. By Mathew Schwartz

For all of its virtual connotations, the Internet depends entirely upon its physical infrastructure to move information around. And the physical distance from server to end user leaves plenty of time for information, in the form of packets, to get lost, resulting in e-mails that never arrive, Web pages that load incompletely and streaming audio or video that pops, flickers or just dies. So getting files closer to end users can improve performance.

One way to do that is by caching files near the edge of the network, closer to users. Barry Weber, vice president of technical infrastructure at BarnesandNoble.com Inc. in New York, says the company's BN.com site saw a 50% improvement in performance from the end users' perspective after it started using caching in February last year.

Within the past few years, more companies have embraced caching as a way to push static content out to users, frequently outsourcing the content to external content delivery networks (CDN). CDNs are groups of Web servers and caching servers, which are simpler and less expensive than Web servers but also aren't able to generate dynamic content.

Companies are increasingly turning to CDNs because they can deliver static content more reliably than the prevailing model of a few clusters of Web servers serving every request. BN.com outsources delivery of its static content to Akamai Technologies Inc. in Cambridge, Mass. After BN.com uploads new content to one of Akamai's servers, it takes two to three hours for it to become available across Akamai's CDN. The CDN intercepts all IP requests for BN.com's static content — HTML, images, streaming audio or video — and serves it to users from the available cache that's physically closest to the user.

Meanwhile, requests for dynamic content, such as book inventory levels and targeted banner advertisements, go to BN.com's servers as usual. Both find their way back to the end user, who sees only the finished Web page. Though CDNs are unnecessary on a small scale, the CDN helps keep the site running quickly when, say, a new Stephen King novel comes out and thousands of users are viewing the book's Web page on BN.com every hour.

Now, for the first time, caching is enabling companies to do things that were previously impossible or very unreliable on the Internet, such as streaming catalogs of media files. But caching still leaves something to be desired for retail companies, such as Barnesandnoble.com, that dynamically generate their Web pages with content specifically targeted at individuals.

BARNESANDNOBLE.COM'S Barry Weber says the site saw a 50% performance improvement from using caching.

Some companies have a financial imperative to make their video files reliably available on the Internet. And reliability has been elusive, especially as the number of simultaneous streams has increased.

"If you're throwing these giant streaming files around your worldwide network, capacity becomes an issue very quickly," says Greg Howard, an analyst at HTRC Group LLC in Stockton, Calif.

But caching, he says, "can dramatically reduce costs for streaming, mainly in the areas of maintaining wide-area network capacity." Just as CDNs can put static files closer to end users, so, too, can they keep copies of streaming media files, serving multiple users from multiple locations rather than from just the few centralized streaming servers many companies use.

Take, for example, Coastal Training Technologies Inc. in Virginia Beach, Va., which sells safety and training videos on topics ranging from blood-borne pathogens to oxyfuel welding.

Before customers buy, they want to preview the videos, which can cost up to $800 each. In the past, Coastal would mail out bunches of preview tapes. But it could take weeks for customers to review them, which made it difficult to close sales with follow-up calls.

Coastal wanted to make decent previews available online but didn't want to have to run Web servers to house the thousands of necessary preview files. After attending the Streaming Media East conference in New York last summer, the company decided to outsource the delivery of its previews to a CDN.

Coastal chose Digital Island Inc. in San Francisco after also evaluating service from Activate Corp., Akamai, Burst.com Inc., Globix Corp. and iBeam Broadcasting Corp. Choosing Digital Island over Akamai was practically "a flip of the coin," says Mark Stelbauer, Coastal's director of e-business.

Coastal uses 500K Advanced Streaming Format files. The company uploads 50 or 100 files at a time

via file transfer protocol to a Digital Island server, and within a few hours, the files are propagated across the CDN. Unlike many other CDNs, which cache content based solely on popularity, Digital Island also maintains many copies of Coastal videos on several different servers.

"Since we're not targeting the consumer, the files are not going to be requested every 15 seconds. For us, it's maybe every 15 or 20 minutes," says Stelbauer. Thus, a popularity-based model wouldn't work there.

Coastal wouldn't specify how many users previewed videos exclusively online but did say that once the figure reaches 20% to 30% of overall users, it will make an impact in the bottom line. Already, however, salespeople are able to call just hours after previews are viewed online, which has helped sales.

Though current hardware and software makes it possible for companies to build their own CDNs, HTRC's Howard cautions against it. "People who are building their own CDNs are finding it too difficult or not cost-effective when you include the cost of labor. It just makes sense to go to the service providers in this market," he says. A company such as CDN outsourcer Akamai has 9,700 servers configured in 650 networks across 56 countries, a scale that few do-it-yourselfers would be able to match.

Pricing for outsourced CDNs wasn't available for this article; CDN vendors wouldn't release the information, and the customers interviewed were contractually prohibited from discussing it.

Users say that, in general, vendors divulge little information, making it difficult to compare them when shopping for a CDN. But there are other ways to evaluate CDNs, namely by their performance. That's what BN.com did in February last year, when it pitted its top three CDN choices (which it declined to name) against one another, watching as each hosted the static content on the BN.com site simultaneously. "It's pretty fascinating, because we really had the statistics," says Weber. The company chose Akamai.

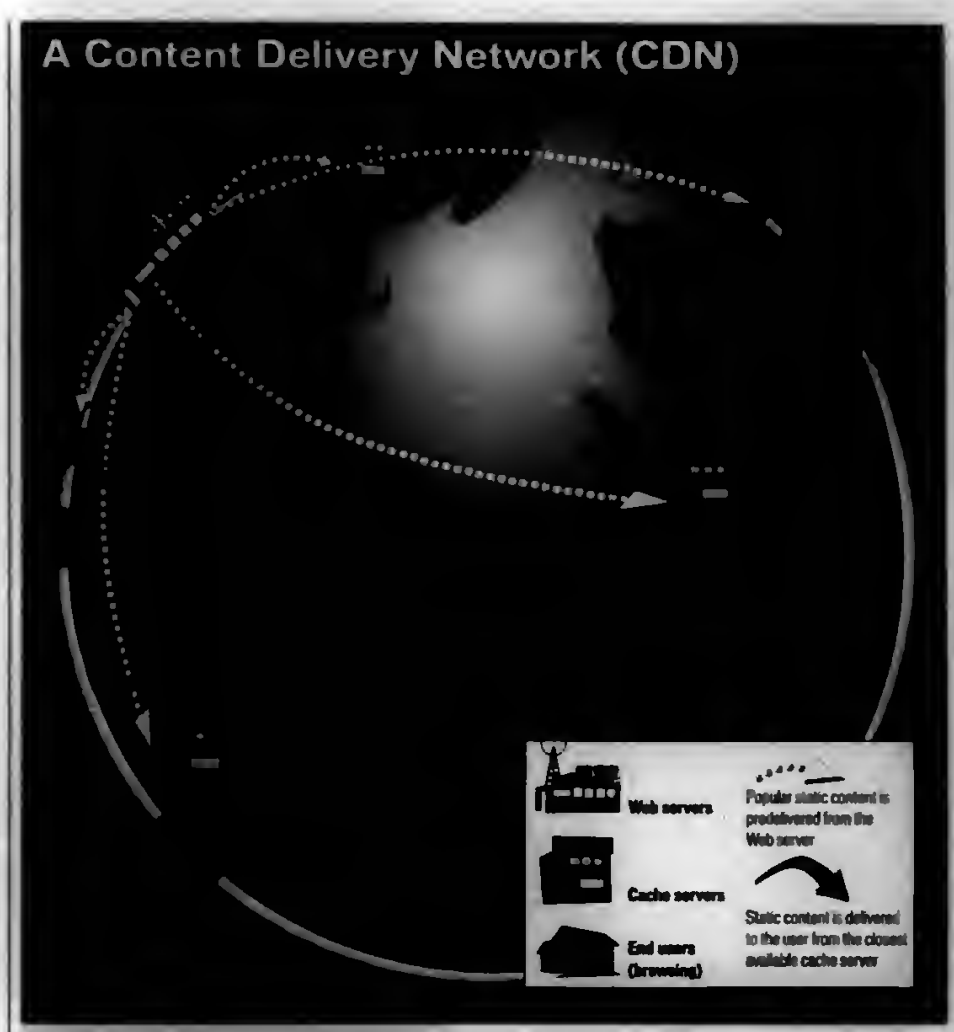
Beyond the Static

Caching can speed the delivery of content, but to date, it has only been good for static Web content, not dynamic information such as pricing. Weber says that's the way it has to be for now, given current cache limitations. "I'd like to go beyond caching static content, as soon as possible," he says.

What holds him back, he says, are "distributed databases and distributed applications," which produce the dynamic information on a Web page that's tailored to individual users or which changes quickly. Caches can't handle that content well.

Caching dynamic content is "problematic from a database standpoint, because you need one version of the truth," says Peter Firstbrook, an analyst at Meta Group Inc. in Stamford, Conn. Companies need to be able to refresh the information across the CDN whenever a little change occurs, so there's just one version of it. So "you have to be able to delete pages from the cache when a certain event occurs, not just at a certain time," Firstbrook says.

At Outpost.com, the site of Cyberian Outpost Inc. in Kent, Conn., for instance, the dynamic information on any given Web page can include product information, real-time stock inventory, product categories and order-tracking information.



HOW IT WORKS: A CDN uses Web servers and cache servers to deliver content to end users more effectively. When an end user requests a Web page, the CDN first ascertains a user's location, then serves static content (HTML pages, images or files) or video streams from the closest available cache server. The closer the cache is to the end user, the faster and more reliable the delivery of information.

Cache servers are pared-down Web servers that maintain copies of popular or important static content. If the cache already contains an item the user is requesting, it serves it without bothering the Web server, reducing the load on the Web server, serving information to end users more quickly and reducing overall congestion on the Internet.

Even prices change moment by moment. "The average price can change six or 10 times per day on [a] product," says Raymond Karrenbauer, chief technology officer at Outpost.com. Every time new inventory lands in a warehouse, the e-commerce application adjusts pricing based on current inventory supply and customer demand levels.

Some industry initiatives are afoot to let companies push dynamic assembly onto the CDN to increase content delivery speed. One is the Edge Side Includes (ESI) open-standards specification, co-authored by Akamai, ATG Inc., BEA Systems Inc., Circadence Corp., Digital Island, IBM, Interwoven Inc., Oracle Corp. and Vignette Corp. The core of ESI is a series of XML tags that specify how and when information and pages should be assembled within the content management system, application server and CDN. To date, Oracle's 9i applicatioo server and Akamai's EdgeSuite infrastructure service support ESI.

Two newer companies are also forging into dynamic delivery territory. Software from Spider-Cache Inc. in Vancouver, British Columbia, and Chutney Technologies Inc. in Atlanta can accelerate dynamic content delivery by using things such as event- or time-based expiration of caches, predictive modeling and real-time cache consistency checks.

But these are baby steps. "The Holy Grail is to move all this stuff out to the edges," says Firstbrook. "But the reality is, I don't think you'll be able to do that anytime soon." ■

MOREONLINE

For more information on caching and for buzzword definitions, click to www.computerworld.com/webcaching

Persistence Pays Off For Wireless Vendor

NetMotion's software keeps wireless LAN and WAN connections online

BY AMY HELEN JOHNSON

EMPLOYEES AT Houston-based St. Luke's Episcopal Health System liked the convenience of carrying handheld Windows CE devices to update patient information over a wireless LAN during rounds. But whenever someone hit a dead zone between floors, the hospital's network would drop the connection. Users would then have to start the session all over again.

It became so annoying, says Gene Gretzer, project leader for access technology at St. Luke's, that the system — which included Sharp Corp. TriPads, Fujitsu PC Corp. PenCentras and Proxim Inc. RangeLAN wireless network cards and hubs — almost ended up in the garbage heap.

Gretzer approached Seattle-based NetMotion Wireless Inc. with the problem. The vendor's NetMotion Mobility Solution software runs on a dedicated server that sits between the wireless network and resources on the wired LAN and passes along transactions and data.

When a device drops its connection, NetMotion uses network-spoofing techniques to maintain the connection with back-end applications while suspending transmissions with the wireless device. Once the connection is restored, users can continue where they left off instead of having to restart the session.

Gretzer says the NetMotion system solved St. Luke's problem, and instead of scrapping the wireless LAN, the health care provider expanded it. The larger system has resulted in a 15% to 20% productivity increase because the medical staff can directly enter chart notes, plan meals and monitor a patient's care at his bedside.

NetMotion's key technology, says CEO Craig McKibben, is the replacement of TCP with the more wireless-friendly User Datagram Protocol (UDP). Since TCP was written under the assumption that the network would be hard-wired, it has undesirable qualities such as a built-in time-out. UDP doesn't have such problems, which helps prevent the dropped connections that plague wireless networks.

What differentiates NetMotion from similar systems that offer persistence over wireless carrier networks is that the product also serves LANs behind a corporate firewall. McKibben says NetMotion works with any LAN or WAN that supports IP, from cellular networks and wireless LANs to the new Bluetooth-based networks.

"From our point of view, it's just another transport," McKibben says.

NetMotion also improves performance by using data compression. It can combine data from two or more sessions owned by a device into a single packet and supports 128-bit encryption of session data.

NetMotion is easy to implement because it doesn't require modifications to a company's existing applications, says Tim Scannell, an analyst at Mobile Insights Inc. in Mountain View, Calif. Unlike systems that require an application port or a switch to XML, NetMotion merely acts as a window through which data can flow, he says.

The downside, warns Gretzer, is that NetMotion doesn't reformat application displays for the smaller screens of handheld devices. That's not a problem for St. Luke's, whose application was designed to support the handheld screens. But other organizations using handhelds may need to add a wireless gateway to reformat displays or run applications that aren't screen-intensive. Otherwise, users will have to do a lot of scrolling to compensate for the smaller display.

NetMotion does have other limitations. It works only with client devices that run Windows 9x, Windows CE or Windows NT. The next version, due later this year, will support Windows 2000 and Windows XP. The company also plans support for Palm OS clients.

On the server side, NetMotion requires Windows NT, but the company plans to add support for Unix.

Johnson is a Computerworld contributing writer in Seattle.

CRAIG McKIBBEN, CEO of NetMotion, says the company's wireless technology works with any LAN or WAN that supports IP.

NetMotion Wireless Inc.

1100 Dexter Ave. North
Seattle, Wash. 98109
(206) 691-8500

Web: www.netmotionwireless.com

The technology: Using network spoofing and other techniques, NetMotion's software improves the reliability of wireless LAN and WAN connections by minimizing the impact of dropouts and lost connections.

Company officers:
- Craig McKibben, CEO
- Joe Savarese, chief technology officer

Milestones:
- March 2000: First product released
- March 2001: Spun off from WRQ Inc.

Employees: 32

Burn money: $8 million from SeaPoint Ventures, Northwest Venture Associates, Digital Partners, Fluke Venture Partners, SilverHaze Partners and eFund LLC

Products/pricing: NetMotion Mobility Solution Version 2.1 starts at $199 per seat.

Customers: St. Luke's Episcopal Health System, Transportation Technology Center Inc.

Red flags for IT:
- The technology works only with client devices running Windows 9x, Windows CE or Windows NT.
- It only offers network-level optimization; it doesn't offer content rerendering for smaller mobile device screens.

COMPUTERWORLD emerging companies

[the buzz] STATE OF THE MARKET

Waiting On Wireless

According to Mobile Insights analyst Tim Scannell, corporate IT has become cautious about deploying mobile applications, in the wake of the dot-com debacle and in light of today's tighter budgets. "Wireless is a business decision, and when the business is down, [IT managers] are going to be cautious about spending money," he says.

Although 60% to 70% of the Fortune 500 companies had wireless projects on the drawing board last year, Scannell says, they've scaled back on most of those plans. He says that next year may be the one in which wireless networks grow, based on his interviews with enterprise customers. With wireless seen as a competitive advantage, there's a good chance that people will make money available for implementing the technology within their companies.

When evaluating wireless systems, enterprises will have plenty of wireless gateway vendors to choose from, such as Aether Systems Inc. in Owings Mills, Md., and Wireless Knowledge Inc. in San Diego, says Phillip Redman, an analyst at Gartner Inc. in Stamford, Conn.

But NetMotion handles wireless LAN and WAN connections, while the wireless gateway vendors tend to specialize in connecting personal digital assistants and Wireless Application Protocol-based phones over cellular connections, and in repurposing content for smaller screens. NetMotion also has better security than most wireless gateways, says Redman, who sees it as more of a complement than a competitor to other companies.

InfoWave Software Inc.

Bothel, Wash.
www.infowave.com

InfoWave's Wireless Business Engine also uses UDP and spoofing techniques to keep sessions running across WANs. It offers "connectors" for integration with enterprise applications such as e-mail, says Redman.

The software transforms the application output into a format usable on the smaller screens of handheld devices. These tools enable InfoWave to move data efficiently across any network to any type of device, Redman says.

– Amy Helen Johnson

E-Biz: Big Major On Campus

The hottest thing on technology campuses today is the e-commerce business degree, which seems to come in as many varieties as the programs that support it. By Michelle Bates Deakin

THE WAY HE SEES IT, Brian M. Strawbridge is going back to school for free.

Sure he's paying $21,000 to earn a master's degree in e-commerce from Boston University. But the 45-year-old marketing-director-turned-Web-developer says that's about half what it would have cost him to create the Web site he's built with the knowledge he's picked up in the classroom. And he expects to make the other half back in income before he even misses it.

"I had a business skill set and 20 years of experience, but no understanding of Web languages," says Strawbridge. Since enrolling in the Boston University program in January last year, Strawbridge has acquired enough database programming skills to do all the coding on his coupon Web site, Thefreeconnection.com.

"The site implementation easily could have cost $40,000," he says. But he saved money because he didn't have to pay for that, plus he receives the "consulting services" of his classmates and professors.

Across the country, graduate programs in e-commerce are popping up like mushrooms after a rain. And like mushrooms, the programs seem to come in endless varieties.

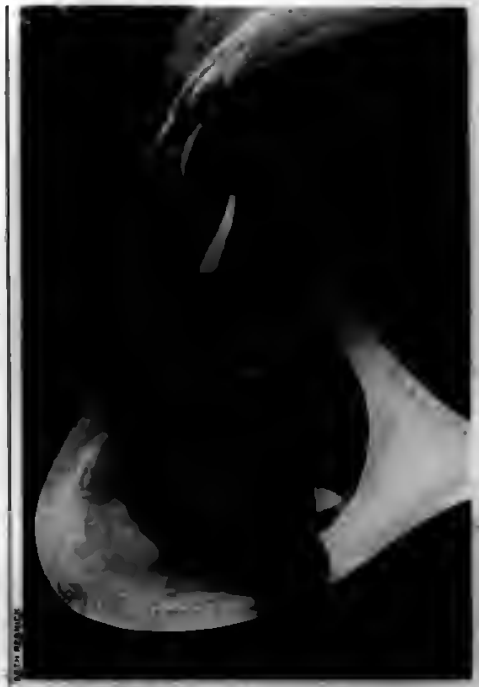
While Boston University focuses on part-time, midcareer students seeking to hone their Internet skills, The Robert H. Smith School of Business at the University of Maryland has carved out a niche in "e-service." Seattle University's Albers School of Business and Economics focuses on layering hard-core technology skills over business know-how.

"Without understanding technology, what kind of business strategy can you think of these days?" says Bonn-Oh Kim, associate professor and director of e-commerce and information systems at Seattle University.

Most of the e-commerce programs were created at the height of the dot-com boom. But it's the dot-com bust that's driving students back to school.

Students are graduating with skills ranging from programming to marketing and from Web architecture to attracting venture capital. Though veteran dot-commers may have been long on technical skills, many didn't learn fundamental business principles until their companies filed for bankruptcy.

"In economic retrenchment, people go back to school," says Marshall Van Alstyne, assistant professor of information economics at the University of Michigan in Ann Arbor, noting that applications to that program increased by 30% this year. "Also, folks that are going to do dot-coms know that they're going to have to know what works and what doesn't."



BRIAN STRAWBRIDGE is learning the skills to maintain his Web site while earning his master's degree in e-commerce.

The University of Michigan offers a master's degree in information economics, management and policy, which is an interdisciplinary course of study that combines information science, economics, management, political science, public policy, organizational theory, psychology, ethics and computer science. The school's e-commerce courses overlap with the university's business school and the electrical engineering computer science department.

"We can teach business strategy and information product design, and we can teach hard-core technology," says Van Alstyne.

Like traditional MBA graduates, many business school grads with e-commerce concentrations accept job offers from consulting firms and focus specifically on e-commerce consulting.

At Rollins College in Winter Park, Fla., Nathaniel Eberle is finishing up a 20-month master of corporate communication and technology program. A highlight of the course for Eberle was a weeklong field trip to Silicon Valley, during which executives from Apple Computer Inc. and Hewlett-Packard Co., among other companies, met with the class to tell war stories and even review résumés.

While some of his classmates seized the opportunity to land jobs during the field trip, Eberle, 24, will wait a few years for the dot-com world to sort itself out before committing to a job. In the meantime, he's heading to West Africa with the Peace Corps.

"I'm hoping to help set up Web pages and do some primitive e-commerce," says Eberle, who envisions helping villagers sell necklaces and clothing over the Web.

Deakin is a freelance writer in Arlington, Mass.

Programs at a Glance *A closer look at the e-commerce programs discussed in this article:*

Albers School of Business and Economics at Seattle University
Seattle
Degree: MBA with major in e-commerce
Length: Two years
Tuition: $491 per credit hour. The number of credits required ranges from 55 to 73, depending on the student's ability to waive requirements. The degree, therefore, costs between $27,005 and $35,843.

Boston University's Metropolitan College
Boston
Degree: Master of science in e-commerce
Length: 10 courses. Full time, one year; part time, five semesters
Tuition: Full time, $12,900 per semester; part time, $2,100 per class

Hamilton Holt School at Rollins College
Winter Park, Fla.
Degree: Master of arts in corporate communications and technology
Length: 20 months, with classes only on Saturdays, from 9 a.m. to 4 p.m.
Tuition: $15,000 for program

The Robert H. Smith School of Business at the University of Maryland
College Park, Md.
Degree: MBA, with concentrations in e-service, e-commerce or e-management
Length: Two years
Tuition: Maryland residents, full time, $11,462 per year; nonresidents, full time, $17,000 per year

University of Michigan School of Information
Ann Arbor, Mich.
Degree: Master of science in information economics, management and policy
Length: Two years
Tuition: Michigan residents, $5,411 per year; nonresidents, $10,875 per year

Systems Engineer

Grinnell Corporation, a manufacturer of fire protection, detection and suppression products, has an immediate opening in its Indianapolis, Indiana office for a Systems Engineer.

Researches, designs and installs software and hardware systems relative to safety and security systems. Provides necessary engineering interface to coordinate and identify desired project specifications from client's perspective into an engineered system. Identifies potential engineering problems associated with software/hardware configuration and database analysis and coordinates solutions for end-users. Works with Project Engineers/Planners to improve system operations and/or product applications for procurement, testing and validation of system applications. Maintains consistent and up-to-date technical awareness of products and services. Provides service support function for system and product application.

Qualified applicants must possess at least a bachelor's or its equivalent in Computer Science or a related field, as well as knowledge of MS Office Software, Windows NT and SQL databases.

Resume and/or cover letter must reflect each requirement above and specify reference code SE or it will be rejected.

Forward resume to Gary Walter, 11820 Pendleton Pike, Indianapolis, Indiana 46236-3929.

Software Design Engineer. Design software incorporating OS-support and algorithms for network encryption, statistical analysis, and network administration on cross-platform object-oriented environment. Must have 2 years experience in job offered or any suitable combination of education, training or experience. Must have knowledge of Visual C++, Java, Perl, Windows, Linux, Macintosh System 7.5, Network Administration and Firewall Construction. 40 hrs/wk, $46,500/yr. Must have proof of legal authority to work in the United States. Send resume to Iowa Workforce Center, 51 W. Washington Ave., Fairfield, Iowa 52556-3327. Refer to Job Order IA1101308. Employer paid advertisement.

SAP Business Information Warehouse (BW) company seeking experienced SAP BW functional/technical consultants familiar with generic and custom extractors, data modeling, info sources and info cubes. Also seeking SEM and Supply Chain Management/APO experience. Please e-mail resume to Business Information Solutions at recruiting@bisamerica.com or fax to (858) 408-6819.

Systems Engineer needed by Computer Services & Integrator in Lincolnwood, IL. Must have a Bachelor's Degree or equivalent in Computer Science with 2 years experience in providing technology and product expertise to clients and company engineers. Respond to: President, Compu Electronics, 6512 North Lincoln, Lincolnwood, Illinois 60712.

Managing Director wanted by Website Design & Interactive Media Co. in San Francisco, CA. Must have Bachelors in Design, Applied Arts, Computer Science or Engineering & ability to manage info tech professionals in design, development & integration of website projects. Respond to: R. Boyle, OVEN Digital, Inc. #R108, 10 Crosby St., New York, NY 10013.

Programmer Analyst: Develop manufacturing related logic, flow charts. Encode, test, debug & install programs in coordination with comp. ops. & manufacturing processes. Write programs using CICS, Cobol, DB2 & RPG400. Req: Bachelors in Comp. Sci., Comp. Eng. Or Electrical Eng. 40-hr wk. Job/Interview Site: Los Angeles, CA. Send resume to Jewel Bells Co., Inc. P.O. Box 811565, Los Angeles, CA 90081

PRODUCT CONFIGURATION MODEL DEVELOPER

Develop product configuration object models of office furniture and other products by converting the functional requirements (structural and dimensional) of products into a technical solution (computer program). Construct the technical solution using Trilogy object oriented development tools. Collaborate with IT on strategies to better build and manage effective product configuration models. Work with marketing, engineering and manufacturing to structure representations of products offered (product vocabulary) and related information. Create and access related product databases to support the configuration of products for bill of materials to coordinate manufacturing.

Candidates must have a Bachelor of Science degree in Computer Science, one year experience as a Product Configuration Model Developer or two years experience as a Programmer, and one year experience with product configuration using Trilogy (SAS) object oriented development tools.

Work Schedule: 40 hours per week, 8:00 a.m. to 5:00 p.m., Monday through Friday.

Wage: $52,125.00 per year

Send resumes to MDCD/ESA, P.O. Box 11170, Detroit, MI 48202-1170. Reference No. 200793. Employer paid ad.

Programmer/Analyst (position located in Chicago, IL) to analyze, design and program APL systems using DYALOG; Design and develop product design tools for various test environments; Integrate various application programs into the overall systems; Prepare project status reports. Require Bachelor's degree or foreign equivalent in Computer Science, Electrical/Mechanical Engineering, or a closely related field, with two years experience in the offered position or as a Systems Analyst or Systems/Software Consultant. Hours: 8:00 am to 5 pm, M-F. Competitive salary and benefits. Send resume to KRM-HR, CheckFree Service Corp., 6000 Perimeter Drive, Dublin, OH 43017, e-mail to ltcareers@checkfree.com or fax to 614-964-3443. Attn. HM

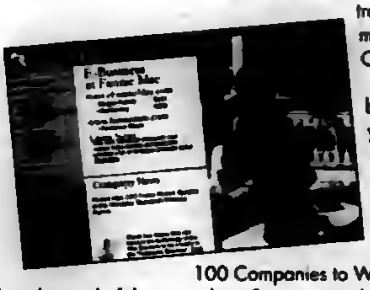
Advertising Supplement

Hot Skills: Web Development

Most every IT professional evaluates career opportunities based on a list of priorities. If working with advanced technology and continued professional development are at the top of the list but there's still something missing, it may be the basic reason for going to work.

Fannie Mae, located in Washington, DC, provides the social mission that appeals to many IT pros – providing funding for residential mortgage lending so that low- to moderate-income American families can buy homes. "You not only have the opportunity to work with best-in-class applications and technology, but we complement that with training and education and a mission of making mortgage funding available to many, many families," explains William Farrell, senior vice president for Finance and Portfolio Technology at **Fannie Mae**.

Fannie Mae's customers are mortgage lenders. "We are working with them to streamline the entire mortgage origination process to reduce the time and cost of getting a mortgage, while also expanding the lender's markets," says Farrell. **Fannie Mae's** web-based product, MORNET Plus, automates the process, linking together the mortgage lender, rating agencies, credit providers, underwriters, appraisers and title service providers.



The company also works the other end of the mortgage process – investors to provide capital for the mortgages **Fannie Mae** funds by issuing debt. Farrell says two web-based systems are used to streamline the process – the bill auction system for auctioning short-term debt on a weekly basis and the Benchmark Automated Syndication System (BASS) for long-term debt issuance.

"We'll continue to grow and expand all of these products," says Farrell. "We want to automate the two ends – lending and investing." The company also has been involved in the development of technology and data standards for electronic mortgages. **Fannie Mae** purchased the first fully electronic mortgage in October 2000.

"We are looking for people who have initiative and drive and the propensity for results," Farrell says. **Fannie Mae** is moving more toward JAVA development and uses Web Logic for its server. Farrell says XML is being used more frequently as a transport vehicle, and database management is handled via Oracle and Sybase.

With more than $800 billion in web transactions last year, **Fannie Mae** has been named "E-Business of the Year in Financial Services" by *Internet Week* magazine. The company is a fixture on the *Fortune Magazine* list of "Top 100 Companies to Work for in America," was listed on *Computerworld's* list of "100 Best Places to Work in IT" and won acclaim for its benefits package from *Money Magazine*, which named it as the leader on its "Best Company Benefits" list.

For more job opportunities with firms doing web development, turn to the pages of ITcareers.

- If you'd like to take part in an upcoming ITcareers feature, contact Janis Crowley, 650.312.0607 or janis_crowley@itcareers.net.
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Minimum Requirements:

•Master's degree in computer science, or a related major area of concentration. Will accept a Bachelor's degree and five (5) years of progressive prior experience.

•Two years prior experience in computer software development position(s) involving: Use of COOL Gen, COBOL, C or C++, CICS, TSO/ISPF, JCL, SQL, OS/2, Windows, DB2, DB2/2, ROBMS and Use of mainframe computers and PCs.

Salary: $ 70,000 and up, depending on credentials.

Send Resume to:

Job Reference # 0601
Jobs@mwcorp.com

Computer/Systems Analyst: Job location: Atlanta, GA. Duties: Ensure maintenance & functionality of 3 in-house servers, approximately 24 desk top personal computers linked to the 3 servers, 12 users reps. laptops dependent on daily accurate downloads. Promote & develop a smooth functioning website for more than 500 customers. Utilize Microsoft NT, Microsoft Exchange Server, Windows 95 & Windows 98 in order to troubleshoot, train co-workers, develop improved systems, & minimize computer downtime. **Requires: B.S. or foreign equiv. in Comp. Sci. plus 2 yrs exp. to the job offered or 2 yrs exp. as a Comp. Consultant or Comp. Tech. Exp. which may have been obtained concurrently, must include: 2 yrs exp to analysis, troubleshooting, and maintenance of comp. systems. Mail resume to: Jeffrey Fryah, President, Georgia Diamond Corporation, 3340 Peachtree Rd., Ste. 1950, Atlanta, GA 30326.**

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Minimum Requirements: Bachelor's degree in computer science, or a related area of concentration. Solid knowledge of most of the following tools and software: C, SQL, Windows, Unix and Delphi.

Salary: $ 45,000 and up, depending on credentials.

Send Resume to:

Job Reference #0701
Jobs@mwcorp.com

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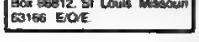

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Microsoft

ed by the court.

"There is nothing to preclude seeking some immediate relief, but there are no current plans" to do so, Connecticut Attorney General Richard Blumenthal, who represents one of the 19 states involved in the lawsuit, said Friday.

But Microsoft said the decision supports its linking strategy. "We remain confident that we will ship Windows XP on Oct. 25. The court's decision supported our right to innovate and sent back a framework on the tying issue that is very high for the government to meet," said Jim Cullinan, a company spokesman.

Microsoft's emerging business strategies will be the key issue in the next step of this case, said Blumenthal. The court, during the remedy phase, "can hear evidence about XP and Hailstorm and any other products or practices that involve the same violation of law," he said.

But some legal experts question whether the government could take immediate legal action. Even one supporter of the government's case, Ken Wasch, president of the Software & Information Industry Association, a trade group in Washington, doubts that the court, after some six years, will move swiftly now.

Perhaps more important, any effort to block Windows XP will likely be opposed by PC makers. "A significant portion of the computing industry depends upon new operating systems as an incentive to upgrade computers. You would probably hear screams from computer manufacturers," Wasch said.

Gates must now decide whether to try, for a third time, to settle the case and live with the problems that may bring. His motivation? Seven appellate judges unanimously ruled that Microsoft is a monopoly that has broken the law. It's not a trivial finding.

U.S. Attorney General John Ashcroft called the decision a "significant victory." But the court found clear problems with the government's case, too. Thus, the government also has reasons to settle.

Both sides can take this decision directly to the U.S. Supreme Court. But Blumenthal wondered why either side would do that. "Both sides are declaring the results a victory; litigants don't normally appeal victories," he said.

If an appeal to the highest court is ruled out, the case will return to the U.S. District Court where the original trial was held, but under a different judge. The appeals court disqualified Judge Thomas Penfield Jackson because of his post-trial comments critical of Microsoft and Gates.

The new judge will be selected at random by a computer program that's used for assigning judges, said Joseph Alexander, a spokesman for the U.S. District Court for the District of Columbia. The selection, out of a pool of about 10 judges, will be made after the case is officially sent back to the lower court by the appeals court. That process should take place within 45 days of yesterday's decision, he said.

MOREONLINE

- More reaction to the latest verdict.
- What is this case costing taxpayers, and Microsoft?
- Vent your views in our forum.
- Find complete coverage at www.computerworld.com/mslegal

The new trial judge, the appeals court wrote, must reconsider whether a breakup is still appropriate in light of the weaker case. The appeals court was also critical of Jackson for not holding hearings on the remedy issue.

The appeals court changed this case in significant ways. Of the three major antitrust violations originally cited, one is no longer viable: that Microsoft attempted to monopolize the browser market. The appeals court didn't accept the government's argument that competitors, such as Netscape Navigator, were denied access to the market.

The second major claim, that Microsoft had illegally tied or bundled its browser to its operating system, was sent back to the lower court. The court, however, upheld the third claim, that Microsoft had used anticompetitive tactics, through its licensing contracts with PC makers, to maintain its operating system monopoly.

"The court's clear signal is that a breakup is a punishment that doesn't fit the crime," said Hillard Sterling, an antitrust expert at the law firm Gordon & Glickson LLC in Chicago.

Remedy options other than a breakup have included requirements that Microsoft end exclusive contracts with PC makers, set single prices for its operating systems and guarantee access to its application programming interfaces, which the company contends it already does.

Continued from page 1

Uncertainty

new software licensing plans.

But Tony Scott, chief technology officer at General Motors Corp., said the ruling may prompt Microsoft to "take pause" in how it engages in future practices.

Still, he isn't expecting a dramatic change.

"When I recently talked to Microsoft, they made it clear that they feel passionately about their point of view and about this case," said Scott. "I don't expect a 180-degree turnaround in the way they do business."

There is also concern about whether the court decision will affect Microsoft's Windows XP operating system plans. The company said that the decision won't alter XP plans and that it's on schedule for an October release. The company also argued that the court decision affirms its linking strategies. But some state officials in the case said that they're worried about the bundling of instant messages and other features to XP and that this linking will come up during the remedy phase.

Bruce Schmidt, a workstation configuration team leader at Edmonton, Alberta-based Atco I-Tek, the IT arm of Atco Group, a Canadian power, utilities and logistics company, said the appellate court's decision doesn't clear up where Microsoft will go with Windows XP.

Schmidt said he has a particular interest in XP because his company likely will skip Windows 2000 and migrate from Windows NT to Windows XP. "The decision yesterday could change what's going to be bundled in there," he said. But Schmidt isn't overly worried at this point. "We're too early in the game," he said. "If I were a couple of months away from rollout, I might be more concerned because then you start to wonder, OK, with this decision, what is the future going to bring with the next iteration of this operating system?"

Other end users, however, are counting on alternative technologies and new market forces to loosen Microsoft's grip. "People like me, who've been entrenched with Microsoft, are looking at other solutions based on Linux," said Jack Nork, CTO of Mason & Madison Advertising in Bethany, Conn.

"I came to a smaller organization from Mercedes-Benz," said Nork. "Here, I have to do a lot more dollar-cost analysis. If I can get something for $60 [that uses Linux] instead of for $5,000 [for Microsoft licenses], then it's not difficult to see where the ROI is," he said. "Microsoft is fueling the development of Linux."

Microsoft Drops Smart Tags in XP

Based on feedback from partners and beta users, Microsoft said it will drop the controversial Smart Tags feature from its forthcoming Windows XP release.

The software maker has come under fire for the feature, which scans keywords in user documents and offers links to related Web sites, many of which are operated by Microsoft entities or partners. Critics have accused Microsoft of trying to leverage its operating system dominance to beat competitors in the Internet sphere. Smart Tags already operate in Office XP, providing links from company stock symbols to relevant information on Microsoft's MSN MoneyCentral site. Office XP was launched last month.

"We feel that, looking at the user experience, there needs to be a balance [between] what the user actually uses and experiences [and] the needs and the demands by the content providers . . . and we feel that we did not adequately get that balance," said Milo Schaap, a Microsoft product manager in the Netherlands.

– Rick Perera, IDG News Service

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FRANK HAYES/FRANKLY SPEAKING

Pyrrhic Victory

FOR MICROSOFT, the good news in last week's appeals court decision in *U.S. vs. Microsoft* was that it won't be broken up anytime soon, and that it will never have to face Judge Thomas Penfield Jackson in court again. The bad news was that the court confirmed Microsoft has a monopoly with Windows, and it repeatedly violated the Sherman Act to maintain that monopoly.

Or to put it another way, the execution is off and a new judge will pass sentence — but the defendant is still guilty.

Relief in Redmond? Sure, and there should be. But there should be concern, too. Microsoft has been branded a monopoly. And that changes the rules.

From now on, Microsoft will have to tread more carefully. Monopolies don't have the same flexibility as other companies. Monopolies have to justify their actions in terms of competition.

The appeals court's decision is riddled with the phrase "Microsoft offers no procompetitive justification" for its actions. From here on in, "procompetitive justification" is exactly what Microsoft will need — every step of the way.

That may not be easy. The appeals court ruled that Microsoft broke the law with some of its Windows reseller license restrictions, exclusive contracts with Internet service providers and agreements with other software vendors to use Microsoft's version of Java. These deals were standard business practices for Microsoft. They'll have to change.

The appeals court also said Microsoft's exclusive browser deal with Apple broke the law, and so did the way Microsoft pressured Intel to stop supporting Java. Microsoft has been playing that kind of hardball for 25 years. From now on, it can't.

But the thing that should concern Bill Gates, Steve Ballmer and Microsoft's rank and file the most is that the appeals court's decision finally answers the question of whether the courts can tell Microsoft how to design products.

Short answer: Yes.

More accurately, the courts can tell Microsoft how it *can't* design products.

Mixing the code for Internet Explorer and Windows is illegal, the court said. So is excluding Internet Explorer from the Windows Add/Remove Programs utility, according to the court.

And failing to disclose that its version of Java would create Windows-only Java applications was illegal too, the court said.

That's right — the appeals court isn't specifying what Microsoft can and can't do just in software design, but also in its documentation.

All this because Microsoft is a monopoly.

Which means, yes, Microsoft's competitors will now be able to do things Microsoft can't. They'll be able to cut certain contracts and offer certain deals that, if Microsoft did the same, would be illegal.

Microsoft's competitors will now have more flexibility in designing their products than Microsoft. They'll be able to compete in ways Microsoft can't.

And if Microsoft's competitors sue the company for illegal anticompetitive behavior, they'll have an easier time now because, as a monopoly, Microsoft has to meet much more stringent standards of behavior.

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Will Microsoft make the necessary changes? The answer will surface in the months to come. We've all seen Microsoft on its best behavior, in the days immediately following the original trial. There's no real doubt that Microsoft can play according to the new rules it faces and meet the new monopolist's standards for its products and its behavior.

Whether Microsoft *will* meet those standards — or will fight them every step of the way — will affect the lives of users, competitors and the whole IT business for years.

SHARK TANK

USER COMPLAINS that he's not getting the answer he expects while running his complex mathematical formula on a custom program. Systems analyst pilot fish checks the formula, runs the program and gets the same lack of results. But he tries a quick tweak to the code, and that fixes it. User insists on knowing what was wrong. "The program was OK," says sheepish pilot fish, "except it had no instruction to print the answer once it was calculated."

"WHAT HAPPENS if you type in a bunch of different letters until you can't type anymore and hit return?" military IT student asks Unix instructor. "Why don't you try and find out?" instructor says. "I did," says student. "Now the system's locked up."

BOSS ASKS IT pilot fish to copy a file to a diskette. At 270MB, it won't fit, so fish asks boss how he'll use the file. "As a data source," says boss, "just to review on the road." Fish burns the file onto a CD and sends delighted boss on his way. Back from his trip, boss stomps into fish's office and shouts, "Why did you make the file read-only? You didn't want me to edit it?"

SERVER UPGRADE is scheduled for the weekend, but boss doesn't want to pay all that overtime. Let's try it Friday afternoon, he says. Fish complies. Result: Entire customer service and compliance staff is paid to sit idle because the data they need is on the server being upgraded.

USER'S WORKSTATION won't connect to the network, and after 45 minutes of trying every diagnostic routine and configuration check he can think of, stumped IT pilot fish calls help desk. "Well, let's go back to basics," says support tech. "Connect to a known good port with a known good cable." Which is when fish realizes there's no network cable attached to the workstation. Fish groans, "I had borrowed it the day before and neglected to put it back."

Loan me your story: **sharky@computerworld.com.** You get a snazzy Shark shirt if your true tale of IT life sees print – or if it shows up in the daily feed at *computerworld.com/sharky.*

The 5th Wave

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"That's what I'm talking about! In PhotoDraws image bank. Isn't that your dog? And aren't those the boss's prize orchids?"

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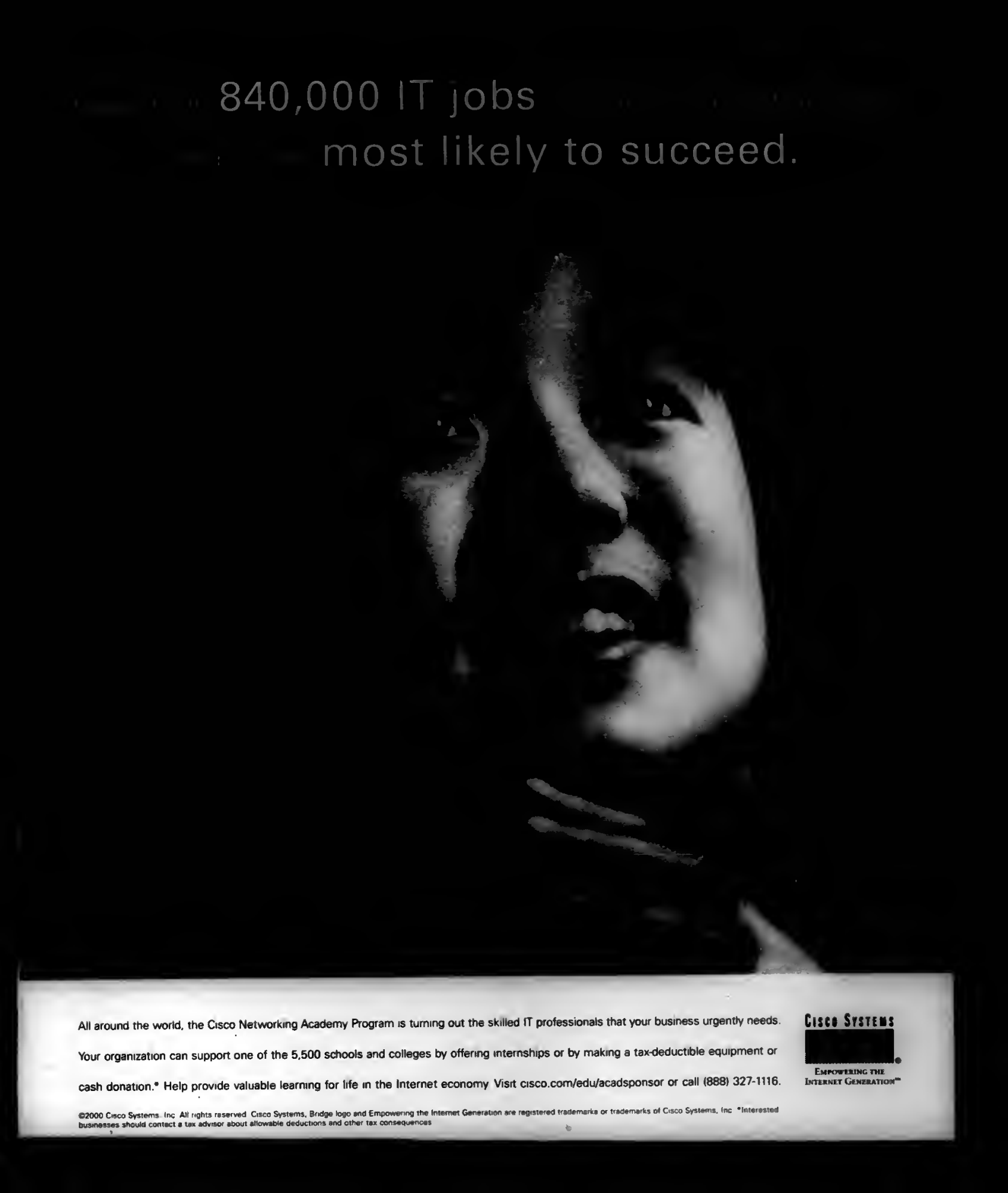

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